VOCATIONS

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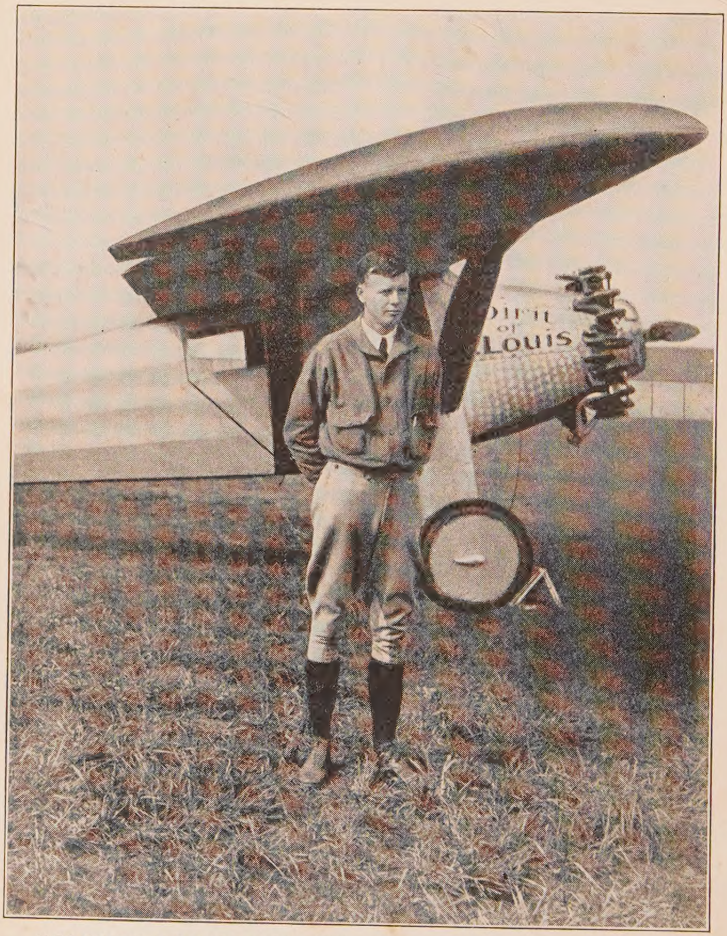

COLONEL LINDBERGH AND THE SPIRIT OF ST. LOUIS

VOCATIONS

The World's Work and Its Workers

BY

WILLIAM MARTIN PROCTOR

Professor of Education

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HOUGHTON MIFFLIN COMPANY

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TO MY CHILDREN

RUTH AGNES PROCTOR

AND

WILLIAM ADAMS PROCTOR

"No man is born into the world
Whose work is not born with him.
There is always work, and tools to work withal
For those who will; and blessed
Are the horny hands of toil"

[redacted] RUSSELL [redacted]

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PREFACE

SINCE the passage of the Smith-Hughes Act, in 1917, there has been a phenomenal development of public vocational education. Coincident to that development, but not keeping pace with it, a considerable amount of attention has been given to the subject of educational and vocational guidance. The more complicated the social and industrial organization of society becomes, the greater becomes the task of helping boys and girls to find themselves, and the more help they need in discovering what their part in the world's work is to be.

The larger cities have set up extensive Bureaus of Guidance and Research. Provision has been made by some of these cities for many full-time and part-time counselors and guidance workers, whose business it is to help school children in the selection of their school studies and in deciding upon their life vocations. In addition to providing vocational counselors an increasing number of school systems offer courses in vocational information or vocational civics. When the question of a life career is uppermost in the mind of a youth no more concrete, practical, or helpful aid can be offered to him than that of putting him in the way of securing accurate and clearly stated information about vocations.

This book has been prepared with a view to meeting the need above stated. With the exception of the first three and the last two chapters, all of its pages have been devoted to descriptive material relating to the great fields of vocational effort by which the fifty-odd million gainful workers in America earn their living.

Instead of following strictly the United States Census occupational groupings, or arranging the vocations in alphabetical order, the descriptions of the various callings have been grouped into chapters according to the similarity of service

rendered or the type of ability necessary for success. Thus, Legal and Civic Vocations, Health and Healing Vocations, and Social-Service Vocations, have been treated in chapters by themselves. This method of treatment promotes continuity of interest, and enables the teacher to concentrate attention upon a related group of vocations. Material treated in this way is easier to recall and to understand than when each vocation is treated as an entity in itself. By this arrangement economy of space also is secured, since it is possible to deal in a single section with elements that are common to the entire group of vocations. This plan has made it possible to treat a maximum number of vocations within the compass of a classroom textbook.

Aids to instruction are provided in the "Seek-Further Questions and Suggestions," given at the end of each chapter. No single book can hope to describe in detail even the most common vocations. That is a task for the publisher of an encyclopedia of vocations. All that can be expected of a single-volume text on the subject is that those who read the brief accounts therein given may have their appetites whetted for more information about the vocations described. It is the purpose of these questions and suggestions to stimulate such further study and investigation. Much is of necessity left to the ingenuity of the teacher of the course, who will no doubt supplement the materials found in the text by materials gleaned from the daily papers, current magazines, biographies, and other sources.

The "Selected References" at the end of each chapter have been confined largely to the Bibliography (page 367). The books in this list which are starred are recommended to be purchased as a "Vocational Information Alcove" for the school library. There are specific page citations to the parts of the books in this list where each vocation is discussed. All of the books included in the list have appeared since the publication of Frederick J. Allen's *Guide to the Study of Occupations*, except the one by Catherine Filene on *Careers for Women*. The teacher should have a copy of Allen's book as a source of material published prior to 1921.

A feature of this book, which should commend it to deans for girls in secondary schools and colleges, is the attention that has been paid, in connection with the discussion of each group of vocations, to the part played in those vocations by women workers. Among the Selected References are included also the latest and best books which have been written from the standpoint of women's vocational opportunities. This special attention has been accorded to the place of women in industry, business, and the professions, because of the very rapid rise in the number of women who have entered the gainful callings, aside from teaching, during the past ten years.

Teachers of Life-Career, Vocational Civics, or Vocations classes, will find this book well adapted to their needs. It has been submitted, in manuscript form, to a number of teachers of such classes. Their suggestions have been embodied in the text, and their approval of the content and method of treatment has encouraged the author to feel that it will prove to be a suitable text for such courses. It is planned for a one-semester course, of eighteen or twenty weeks. Some of the vocational groups can be handled in two- or three-class periods, while others should receive a week or ten days of attention. The time to be devoted to each occupational group can be determined by the teacher, partly on the basis of the vocational interests of the pupils in the particular class, and partly on the basis of the importance of certain groups of vocations in the community where the class is being taught.

Other students, not enrolled in Life-Career Classes, will also find the book helpful. Vocational information has a cultural as well as a practical value. It is an essential part of a liberal education to know the kinds of work in which the world's workers are engaged. Hence, the reading of a book such as this might well be made a part of the required work in connection with courses in General Social Science, or Elementary Economics.

Secretaries of the various welfare organizations will find the book useful to put in the hands of their young protégés during

the "find-yourself" campaigns and "vocational-guidance" weeks which are carried on by such organizations. Vocational-guidance committees of Kiwanis, Rotary, and other service clubs will find the book suitable to recommend to the boys whom they have undertaken to counsel. The widespread interest of such organizations in the task of guidance, and their willingness to coöperate with the schools, should be capitalized by all teachers of Life-Career classes.

The author wishes to express his gratitude to Dr. W. T. MacQuarrie, President of the San José State Teachers College, and members of his teaching staff, for helpful counsel and valuable suggestions made during the preparation of the manuscript of this book; to Dr. Harold Benjamin, of Stanford University, for the opportunity to try out the book in a Vocations Class in the Palo Alto Union High School; to Miss Jessie Gibson, Dean of Women, Pomona College, for the critical reading of the completed manuscript; and to Miss Catherine Loud, for invaluable assistance in compiling the chapter bibliographies. Especially is the author indebted to Dr. Ellwood P. Cubberley for the original suggestion that he undertake the writing of the book, and for reading and editing the completed manuscript.

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VOCATIONS

CHAPTER I

WHAT ONE OUGHT TO KNOW ABOUT A VOCATION

Learning about vocations. One of the greatest manufacturers in this country, Mr. Henry Ford, when asked to give a word of advice to the youth of America, said: "You will never be content or happy unless you find the way to work — to some useful occupation — whatever it may be. If your ambition is to be idle you are doomed to inevitable failure." This book has been written in the hope that it will be of assistance to many American boys and girls in their effort to "find the way to work — to some useful occupation." The writer, as a boy and as a young man, working his way through high school and college, had the good fortune to engage in fourteen different kinds of work: office boy, cash boy, paper carrier, helper in a tomato canning factory, clerk in store, tinsmith's helper, garden hand, harvest hand, firer of a hop kiln, lumber-jack, mucker in a silver mine, chainman in a surveying crew, stenographer in a law office, private secretary to a college president. This varied experience was an ideal way to learn about many different vocations, but very few boys to-day are so fortunate.

In these days it is usually necessary to learn about vocations by reading books, magazine articles, and other literature, or by asking questions and observing those who are engaged in different kinds of work to see what they do. There are so many different kinds of service which people perform, and so many distinct vocations, that one could not possibly find time to have first-hand experience in more than a very few of them. That is why it is important for us, while we are yet in school, to study

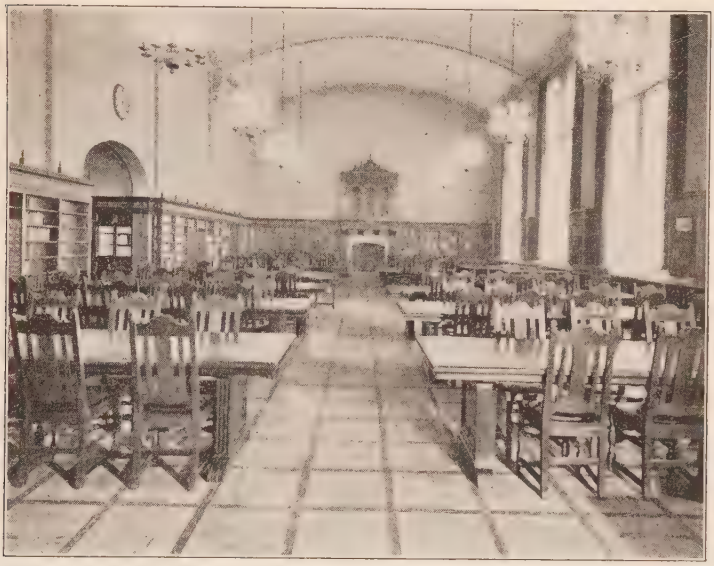
about the world's work and its workers. Even though we can try but a few vocations ourselves, such trials help us to become broader-minded and more interested in other people if we know something about the tasks which they perform in their various ways of making a living.

In making a study of a vocation it will be helpful to know what to look for, what to ask about, and how to proceed in gathering the necessary facts. That help is what this first chapter is going to try to supply. It is to serve as a kind of measuring stick which we can take with us into the study of a vocation when we are trying to find out whether or not it is the work we would choose for a life-career.

1. *Analysis of the vocation*

Nature of the work. The first question one should ask about a vocation is this: "What is it?" Suppose you are interested in becoming an engineer. You look in the dictionary and find that an engineer is defined as "a person who manages or runs an engine." But you say: "I do not want to be that kind of engineer; I want to be the kind of engineer who plans bridges, lays out railroads, and surveys land." In trying to find out all you possibly can about that type of engineering, you will discover that there are a great many different kinds of engineers, and that many books and magazine articles have been written describing just what sort of service each kind of engineer performs.[1] In order to become well informed about engineering you will want to read as many of these books and articles as possible. You will also want to meet some persons engaged in the type of engineering in which you are interested in order to ask them questions, and if possible see them at work. A little later on you may even have an opportunity to secure employment for a summer as chainman or axe-man in a surveying crew. In these different ways you will be able to learn a great deal about the vocation that will be helpful to you in considering it as a possible life-career.

[1] See Chapter XX on Engineering, pp. 273–283.



AN UP-TO-DATE SCHOOL LIBRARY

High School libraries provide many books that describe different vocations

Needed vocational information. There are certain specific items of information which should be known about a vocation by the person who is thinking of entering it. For example, one should consider the importance of the vocation. This can be judged in various ways. One way is to find out how many people are making a living in that vocation. Nearly one third of all gainful workers are engaged in some agricultural vocation. This fact indicates that farming is an important vocation. Another way to estimate the importance of a vocation is to inquire into the type of service which it renders. Again farming is important from this point of view, because food production is dependent upon the result of farming operations. Every person in the country is concerned to have the food supply maintained. But there are some vocations in which comparatively few persons are engaged but which are nevertheless

vastly important. There are not many inventors, but one of them, Thomas A. Edison, has been responsible for inventions on which great business and manufacturing enterprises are based and which represent thirteen billion dollars of investment, as well as unmeasured benefits to humanity in comforts and enjoyment of life.

Supply and demand for workers. The supply and demand for workers in the vocation you are considering should also be investigated. Some vocations in which many workers were employed fifty years ago are no longer considered desirable because the number of workers required is rapidly decreasing. Harness and saddle makers used to find ample employment, before the coming of the truck and the automobile; their numbers have been reduced until at the present time there are less than two thousand persons engaged in this vocation. On the other hand, only fifteen thousand workers in automobile factories were reported in 1910; in 1920 eighty-three thousand were reported, and in 1928, one automobile manufacturer alone had more than one hundred and twenty thousand employees. Before deciding to prepare for a vocation it is therefore wise to find out, if possible, whether it is a vocation which is likely to increase or decrease in importance.

Physical conditions surrounding workers. The physical conditions of a vocation should be studied. Some vocations are dangerous to life and limb. This danger is not necessarily a reason for avoiding them. It might even be an incentive to persons who enjoy taking risks and doing difficult things. Many vocations are unnecessarily dangerous. Added to the natural hazards of the vocation itself there are often conditions which tend to increase those hazards — perhaps safety devices are not installed; equipment is not inspected; proper precautions are not taken. Then, too, there are certain occupational diseases — kinds of illness which attack workers in certain fields. Miners in certain mines are subject to arsenic poisoning; painters are subject to lead poisoning; paper hangers are affected by dust from some kinds of wall paper; stone cutters

suffer from inhaling the powdery dust from their power-driven stone-cutting tools. Factory workers sometimes have to work in poorly lighted, unsanitary, crowded work-rooms.

Conditions unfavorable to health and safety are not confined to any particular vocations, but may exist in almost any of them. The worker should know what to look for, and, if possible, avoid those industries or individual employers who do not make every effort to surround their workers with comfortable, safe, and healthful conditions for their daily work. In considering business and professional vocations also the conditions under which one will have to work should be borne in mind: the traveling salesman must be away from home a great deal of the time; the sales person is on his feet most of the day; the doctor is on call at any time of day or night; the lawyer is subjected to long periods of strain during the trial of important cases; the school teacher has to adjust himself to forty varieties of disposition during the day, and spend long hours correcting papers at night. Every vocation has its disadvantages, as well as its advantages, and these should be well understood by the young person who is thinking of entering any particular field of employment or service.

Regularity and permanence of employment. Some vocations are seasonal — that is, a great many workers are employed at certain times of the year, and at others very few are required. When farmers are harvesting their grain they need thousands of laborers for a few months, but they could not possibly keep all these workers employed throughout the year. The canning season in the fruit and vegetable canning industry calls for thousands of workers during a part of the year, and for very few the rest of the time. Certain trades are seriously affected by weather conditions. Those who work at these trades either have to make enough during the busy season to support themselves during the slack season, or find other work to do between seasons. It is estimated that there are always more than a million workers out of employment in this country, and when industrial conditions are bad, this number sometimes increases

to ten per cent of the gainful workers. These facts make it clear that the permanence and regularity of employment should be taken into account in selecting a life-career.

Leisure and vacation time. The number of hours a day which are required of the workers is another point to be considered. An eight-hour day with a half-day off on Saturday means that a worker will have considerable time for rest and recreation. A ten- or twelve-hour day with six full working days, or even seven, which is still the rule in some industries, means that the worker is going to have almost no leisure time at all. Some employers plan to give their employees a two weeks' vacation with full pay each year. School teachers have two or three months' vacation. Other employers do not plan for any vacation at all, unless the worker wishes to take time off at his own expense and take his chance of finding his position open and waiting for him on his return. Since one's fitness for doing good work depends upon the way one spends his leisure hours, it is worth while to find out all you can about this aspect of a proposed vocation.

Not only should one know what the amount of leisure and vacation time in a particular vocation is likely to be, but one should begin, early in life, to learn how to spend leisure and vacations in a happy and profitable way. Hobbies, such as making collections of interesting objects; sports, in which one can continue to engage in adult life; and artistic skill, either in music or handcrafts, make it possible for one to enjoy leisure time in a satisfactory manner.

Income or wages. What wages one may expect is another important item to be investigated. It is not a good idea to think of a vocation solely from the point of view of the amount of income that it may possibly bring in. Some vocations in which men earn large incomes are not desirable because they are too dangerous to health, while others are not desirable because they involve doing things which are illegal or against the welfare of others. On the other hand it is necessary to consider what income a vocation will yield in order to determine

whether such work will support the worker adequately, and allow him to take care of his family or other dependents.

Some good principles to keep in mind, when considering the income of a vocation, are these:

First principle: Is the pay at the beginning approximately as high as it will ever come to be? The answer to this question will help one to discover whether there is a chance for promotion and increase of pay. Some jobs pay fairly high wages to beginners, because the work is so easy to learn that long experience does not greatly increase efficiency. In other situations the pay at the beginning is low, and promotion rather slow and hard to earn, but the pay for the better positions is high. The latter type of position is preferable. It is better to accept a small wage at the start where there is an opportunity for growth and development, as well as for an increase in income, than to take a position where the wage at the beginning is high but where opportunity for increased efficiency is small.

Second principle: the regularity of the income. Does the income from the vocation come in regular monthly or weekly installments, or is it irregular — now a small sum and again a larger amount? This is an important item. When one's income is regular one can meet monthly bills promptly and establish habits of regularity, but when one's income is irregular it is easy to get into careless habits in paying debts. A regular income also makes it possible to budget one's expenses; that is, to plan beforehand just how much can be spent for rent, food, clothing, recreation, etc., and how much can be set aside for the savings account.

Third principle: the source of the income. Is the employer responsible and able to pay what he offers? Every year there are thousands of workers who fail to receive the wages which they have earned. Sometimes the employer is honest, but has underestimated the cost in bidding on a contract and fails, thus causing great loss to his employees. Often, however, there is deliberate fraud. People are induced to go to work with promises of large wages, but after they have done the work there is

no money to pay for the services rendered. Any advertisement which promises large pay for a small amount of work is to be regarded with suspicion. It is usually only an alluring kind of bait used to catch the simple-minded.

Retirement salary or pension. This provision should be considered in estimating the income and rewards of a vocation. An increasing number of public-service corporations, as well as a great many established industries, are making provision for retirement allowances or old-age pensions for their employees. Sometimes, in fact more often than not, the employee makes a small monthly payment toward this pension and the employer deposits a similar amount with the State, or with some annuity insurance company, and at a certain age, after a given number of years of service, the worker is entitled to draw an allowance. Such allowances are especially important for persons whose salaries are not high, and whose incomes are such that it is difficult to save enough to take care of oneself in old age. There are also casualty and disability incomes provided by State Workingmen's Compensation Acts, whereby employers are required to guarantee payments to employees for loss of time on account of accidents which happen in connection with their work. A position with an organization that provides retirement pensions and accident and sickness benefits is much more desirable than one with an organization that does not offer such assistance. Such protection means peace of mind and freedom from worry. Increased efficiency on the part of the workers is thus made possible.

Opportunities for advancement. There are many vocations which are called "blind alley" jobs because they are like alleys which end in the middle of a block — they lead nowhere. In such vocations the beginning pay is usually approximately as high as that which is earned after several years of experience, and the tasks to be performed do not change much from beginning to end. Ambitious young people will not hold such positions long, but will be looking around and preparing themselves for positions which have in them opportunities for advance-

ment. In well-established industries there are usually well-defined lines of promotion. The beginner is willing to take small pay and do hard work if he can see that faithful service leads, within a reasonable time, to the next higher round on the ladder. Section hands have been known to go up through all the stages of advancement to the position of president of the railroad. Office boys, or filing clerks, or stenographers not infrequently earn their way to managerships or presidencies of their corporations. These promotions are usually won, not by merely wishing for them, but by working and preparing for them. The most intelligent worker will seek to find a vocation which has in it real opportunities for promotion, and will then study his job to find out how the promotion may be earned. One of the most sought after kinds of advancement is that which makes one independent; that is, gives him an opportunity to become a proprietor or an employer himself. This stage of progress, however, comes to most people only after a number of years of apprenticeship in working hard and faithfully for other people.

Social and moral hazards. There are kinds of work which in themselves are attractive, both from the standpoint of earnings and possibilities of promotion, but which are undesirable for other reasons. Before deciding definitely upon a vocation it is a good idea to look into the kind of social and moral surroundings the vocation will offer a worker. Is it possible for the worker to live in a community where there are good schools, churches, libraries, and other social and cultural advantages? With what sort of persons will he be associated in his daily work? It may be said that by the time we are able to enter a life-career we should be strong enough in character to enter any respectable vocation without fear of injurious influence upon ourselves. It is nevertheless true that we owe it to ourselves to find types of employment which do not involve constant exposure to wrong doing, or which do not constantly force us to associate with people who have low moral standards. A person might be able to take care of himself in such surroundings,

but he would not wish to bring up a family under such influences. The kind of community that our vocation will require us to live in, and the kind of people with whom we will be associated, must be included in our study of a life-work.

Contribution to life's ideals. We all have day-dreams in which we think of ourselves as occupying positions of importance and influence in the world. It is one of the glories of America that so many boys and girls have been able to realize their youthful dreams. Another remarkable feature of American life has been the willingness of our young people to work at any kind of job while securing an education to fit themselves for the service which they would most like to render in the world. It is a good thing, therefore, to ask ourselves if the thing we now think we would like to do will make it possible for us to reach our life's highest goal. Shall we be able, while working in this vocation, to develop the qualities and acquire the training that will help us to realize our ambition? If following a certain vocation because of the income it furnishes tends to divert us from our main object in life, it would be better to live temporarily on a smaller income and stick to the main line than to be permanently side-tracked. There is much sound sense in the old adage — "Hitch your wagon to a star." Aiming at a worth-while goal gives us a standard by which to measure the desirable features of possible vocations. Whatever the attractive features of a vocation may be, if it does not lead in the direction which we would like to have our life take, we would better turn to some other vocation which does lead in that direction.

2. *Preparation for the vocation chosen*

General education. The more all-around education one can have the better. The work of the world is coming more and more to be placed in the hands of those who have been trained for the tasks which they undertake to perform. The uneducated and untrained are the last to be employed and the first to be dismissed when there is a slack season. In the United

States, there is so much quantity production by the use of complicated machinery that it is necessary to have intelligent workmen. Since every State offers free education to its citizens through the high schools, and many States through the university, it is possible for every person to go as far as his ability and his financial resources will permit. Many studies have been made which show that there is a direct relation between the amount of education which a person has and his income and success in later life. High-school graduates usually earn more and hold better positions than eighth-grade graduates, and college graduates do better in life, as a general rule, than do high-school graduates. There are numerous exceptions to these general rules, but there is enough truth in these statements to cause a person to make every effort to go as far as possible in his general education before leaving school to go to work.

Preparatory and pre-vocational work. Many junior high schools now offer courses which give a good idea of the kinds of work involved in a number of different vocations. Students work in the woodworking shop, for example, to find out by first-hand experience the way in which a carpenter or a cabinet maker does his work. The tools of the wood-working trades are used, and many of the foundation principles of those vocations are tried out, in a five- or six-weeks' course. Next the students go to the sheet-metal shop, and in a similar way find out about the metal-working trades, and so on through the machine shop, the printing shop, and other shops. They do not learn these trades, but they have a chance to find out whether they would like to learn any of them. By actually handling the tools of the trade they also discover whether they have any skill or aptitude in the use of such tools. This sort of experience is extremely valuable in helping one to make up his mind about his life-work.

Specific trade and vocational preparation. After a person has explored many different vocations, and has decided on the one in which he thinks he would do his best work, he should find

out all he possibly can about the training necessary, and how to get that training. If one is unable to stay in school on account of limited finances it is sometimes possible to secure a position in the vocation in which one is interested, and then to attend a continuation, or part-time school, for from four to eight hours a week, until legal age at which school may be left is reached. In some States this is sixteen, and in some States it is eighteen years of age. In this way one learns the vocation by actual experience and secures additional school work in the meantime. It is much better, however, to stay in school on full time if possible, taking training in a trade school or in the Smith-Hughes[1] department of the local high school. Courses in agriculture, machine trades, metal work, printing, electricity, auto repairing, carpentry, and cabinet making are open to boys; and dressmaking, millinery, design, homemaking, and other vocational courses are open to girls. In these courses three hours a day are devoted to learning the vocation, and three hours a day to English, shop mathematics, social studies, and so on. Graduation from a Smith-Hughes vocational course usually enables a boy or girl to cut down the apprenticeship period by two or three years. Graduation from a good full-time trade school often enables a person to begin work as a journeyman, within a very brief period after entering the vocation.

Preliminary preparation. If one is interested in a business vocation it is almost necessary to complete a high-school course. A few persons are able to enter minor business vocations after taking a junior high-school course in Junior Business Training, but if one expects to be a stenographer, bookkeeper, accountant, salesman, or business manager, it is necessary to stay in school, take the commercial course, and in addition to that secure all the general education possible. This course is necessary because, first, people are not employed for responsible business positions much before they are eighteen or nineteen

[1] The Federal Government appropriates several million dollars each year to be used by the Federal Board for Vocational Education in providing vocational training for boys and girls over fourteen years of age, in Smith-Hughes Departments of High Schools.

e; and, second, because the training should be taken as near as possible to the time when it is to be put into practice. Business colleges, under private control, often advertise to prepare one for a business career in six months. They do give intensive training in bookkeeping and stenography, but they do not give as good an all-around education as that to be obtained in a well-managed public high school. If, however, one has majored in commercial subjects in high school, and after graduation can attend a good private business college for a few months to get a thorough review and drill before taking a position, it is a desirable thing to do.

Those who plan to enter professions, such as law, medicine, teaching, and so forth, must be prepared to undertake a long course of training. High-school graduation, college graduation, and often several years of post-graduate work in a university must be faced. This means that one does not have a chance to begin to earn anything at his profession until he is from twenty-two to twenty-five years of age, and in such professions as law and medicine, after graduation from the professional school there are usually several years when one's income is very small. The training is expensive and of long duration for those who select professional careers, hence before choosing such a life-career, you need to be quite sure that you are able and willing to undergo all the hardships and sacrifices that preparation for professional life requires one to make.

Laying of definite plans. Whatever the vocation or profession which one finally chooses it is necessary to lay definite plans for securing the right sort of training. One needs to think of the cost of the training, and where the necessary money is to come from. Most boys are able to begin to earn some money, after school and during vacations, while they are still in elementary school. A savings account that will help to pay for a good education should be started as early as possible. Vacation jobs will help one to earn for the savings account, and also to have confidence in one's ability to earn part of the expenses of high-school and college education. The

forethought represented by a boy's savings account will encourage his parents to make sacrifices to help the ambitious youth to keep on with his school work. Technical schools and colleges also have scholarship and loan funds to help deserving students who show a willingness and an ability to help themselves. A considerable proportion of every American college student body is working its way through college, either in whole or in part. These students are the ones who are likely to get the most out of their college courses, because they most appreciate the privileges which they have earned. The world not only gives a fair chance to the young man who has a definite purpose, but it often turns aside to give him friendly assistance when it sees that he is not a parasite, but an independent, self-reliant worker.

3. *Sources of vocational information*

Books and pamphlets. A great deal has been written about every important vocation. By consulting city librarians, school librarians, and school counselors, it will be possible to get suggestions as to the best books and articles to read for certain vocations. A few suggestions will be made concerning reading material describing the vocations touched upon in the chapters of this book. These will represent, however, only a small part of the possible literature that is available and which relates to the vocations herein discussed.

Moving pictures. A number of moving pictures have been made of some of our greatest industries, thereby making it possible to see a plant in operation and to hear a lecturer give a careful description of the various processes which go on there. The picture has the advantage that it can be repeated, and details brought out which would be overlooked in a hasty journey through the plant itself. Another advantage of such a picture is that thousands can be given an opportunity to become familiar with the vocations carried on in the plant, whereas only a few could be permitted to inspect it as visitors. Such reels are provided by the Visual Education Departments

of State Universities, or State Departments of Education, and can be secured by schools for the cost of transportation.

Visits to offices and industrial plants. It is sometimes possible for the teacher to take a life-career class to visit a manufacturing plant. If the manager of the plant is willing to have the class come he usually arranges for a guide who explains the parts of the plant, the various types of machinery, and the tasks of the workers. These trips are difficult to arrange, but if the members of the class do their part they may obtain a great deal of practical information from such trips.

Personal interviews. Another source of vocational information is that of meeting and talking with people who are now engaged in the vocation about which you wish to learn. It is usually desirable to have the teacher or counselor arrange for the interview, instruct the students concerning the best questions to ask, and tell them what to look for in the shop, office, or place of business of the person interviewed. After the interview has been had the results should be reported to the class, or discussed in conference with the teacher or counselor.

Talks on vocations. Talks by prominent persons engaged in various lines of work provide another source of vocational information. When such speakers are asked to address an assembly or a life-career class, they usually give their hearers an opportunity to ask questions. One should do some reading on the vocation to be discussed before the assembly talk is given in order to be able to ask intelligent questions. Thoughtful questions help the speaker to give the hearers the kind of information they most desire.

With all of these sources of information, and many others not mentioned here, at the command of American boys and girls, it ought to be possible for them to learn a great deal about any vocation in which they become interested. Also it should be possible to find out what kind, how much, and where the necessary training for the vocation which they select for a life-work can be secured.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Why is it more difficult for boys and girls to-day to secure first-hand experience in vocations than it was for their fathers?
2. Make a list of vocations employing thousands of men, which were not in existence fifty years ago.
3. Where do the men who work in the harvest fields and orchards in the summer, find employment in the winter?
4. In Russia they now call all vocations "professions." Why do you suppose they do this?
5. Bring in clippings of advertisements from a large daily newspaper offering employment of various kinds. See if you can tell which of these are probably genuine, and which may have some catch or fraud in them.
6. Make a list of all the kinds of jobs which you consider "blind alley" jobs, and discuss this list in class.
7. What are some of the vocations having "moral hazards" that should cause a person to hesitate before deciding to enter them?
8. When a speaker says that "any ambitious boy may aspire to be President of the United States some day," what does he really mean?
9. Why is it that most American fathers and mothers want their children to have a better education than they themselves had?
10. Is it possible for one to learn all that one should know about an occupation from books or magazine articles alone?

SELECTED REFERENCES

1. Edgerton, A. H.: *Vocational Guidance and Counseling*, 118–54. (For the teacher.)
2. Fryer, Douglas: *Vocational Self-Guidance*, 52–68.
3. Gowin, Wheatley, and Brewer: *Occupations*, 88–110.
4. Hill, Howard C.: *Vocational Civics*, 3–8.
5. Lane, May Rogers: *Occupational Studies*, 7–18. (For the teacher.)
6. Proctor, W. M.: *Educational and Vocational Guidance*, 267–76. (For the teacher.)
7. Rosengarten, William: *Choosing Your Life Work*, 34–51.
8. Ziegler and Jaquette: *Choosing an Occupation*, 15–24.

CHAPTER II

WHAT ONE OUGHT TO KNOW ABOUT ONESELF

1. *Special interests, aptitudes, and abilities*

Careful analysis necessary. Knowledge about a vocation is important, but knowledge about oneself is equally important. The one kind of information is not of very great value without the other. Before it is possible to select a vocation wisely it is necessary to know what the nature of the work is, conditions under which workers have to perform their duties, income, kind of special abilities required, advantages and disadvantages, and many other items discussed in the preceding chapter. Also it is very important to know our physical and mental abilities, our special interests and aptitudes, character traits, and other assets and handicaps, in order to estimate whether the vocation in which we are most interested will give us a chance to apply ourselves to the best advantage. In this chapter we shall consider some of these personal qualifications in order to give the reader some hints on making a survey of his own qualifications for various types of vocations of which he may be thinking.

Special interests. To be interested in something is to think of it as so worth while that we would enjoy examining it, handling it, or working with it. We are much more likely to excel in activities in which we are interested than in activities to which we are more or less indifferent. That is why it is necessary for us to think of the kinds of things, and the types of activity in which we are especially interested, when we are trying to select a vocation. If it is possible for us to find a vocation which involves handling the materials and performing the acts which give us pleasure, we are much more likely to succeed in that line of work than in any other.

Natural interests. The interests which we seem to have without knowing why we call our natural interests. They are

most often connected with play activities. We like to make things, or we like to lead in games and all kinds of sport. We like to make collections of stamps, marbles, butterflies and other objects. We enjoy being with a crowd, or we prefer to be by ourselves. We always want to be the pitcher in the scrub game of baseball, or we prefer to let some one else take the lead and show us the way the game should be played. We like to take things to pieces and see how they are made, but we leave it to some one else to put them together again. We like to mend things, or to find new ways of doing everyday tasks. We like to try experiments. We like to go with the crowd and do just what they do, or we like to do things in our own way whether others like it or not. All these likes and dislikes of ours are straws which tell the way the wind is blowing, and if we analyze our natural interests carefully it will help us to estimate better what our vocational interests should be.

Acquired interests. Interests which we come to have as a result of learning about people and things in our school work, or association with parents and friends in everyday life, we call acquired interests. Sometimes we are not interested in a school subject, but by working at it every school day we come to like it as we begin to know more about it. Or, it may be a person that we did not like the first time we saw him. When we became better acquainted, however, we could see his good points. After a while, by working together, we became really well acquainted and grew to be real friends. It is like that with a vocation. At first we are interested only in those vocations which involve activities in which we like to engage. One of our first ambitions may have been to be a policeman. We liked to wear a uniform with brass buttons on it. Or, we wanted to be a motorman, because we liked to ride on the street cars. As we grow up, however, we become interested in other vocations because our fathers, brothers, sisters, or uncles are engaged in them, or because some one we know quite well and admire greatly is in that vocation.

It is possible also to create an interest in a vocation by hear-

ing people tell about it or by reading about it. We read about Colonel Lindbergh's non-stop flight to Paris, or Captain Wilkins's flight from Point Barrow to Spitzbergen, and we begin to be interested in aviation. We read everything we can find, we visit the local airport, we meet aviators and ask them all sorts of questions, we study the aviation journals. We beg our parents to let us go up in an airplane. We make models of airplanes in the woodworking shop at school. While this interest is at its highest point we probably decide that we want to be an aviator, or an aeronautic engineer. When our interest is intense is the best time to gather all the possible information about a vocation. Whether we ever follow that calling or not, we are likely to remember the things which we learned about it while our interest was at white heat.

Special aptitudes and abilities. When a person seems to perform certain activities with a high degree of skill, or to learn some subjects much more easily than others, we say that he has a special aptitude for that subject or activity. The person may have the skill because he has taken a great deal of interest in the activity, and has practiced it continuously and with a definite purpose to excel in it. Or it may seem, as we say, to come naturally to him so that he enjoys doing it, while to some other person it seems hard and requires a great deal of effort. There are several kinds of aptitudes.

Physical aptitudes. People have different physical abilities, partly because of what we call inheritance, and partly because of practice, training, and drill in physical exercises. Theodore Roosevelt started out with a very poor physical equipment. His eyes were poor, and he was in poor health during his early boyhood. By the time he had come to young manhood, however, he had built up his body so that he was a strong, athletic man. Some people have physical defects and deformities which make it impossible for them to do certain kinds of work, but there is hardly a person so badly off that he cannot learn to do something well enough to engage in it as a vocation. A young lady entered the University of California recently who

had no arms, and had never had any. She did all her writing with her toes, and was so interested in her studies that she graduated with honors.

Vocational success often depends upon the possession of certain physical abilities. One whose hearing was seriously defective, or entirely absent, or one who lacked a sense of rhythm, or the ability to tell the pitch and intensity of sound, could not very well become a successful musician. A blind person could not become a painter of pictures, but there have been many excellent musicians who were blind. A railroad engineer needs to have both good hearing and good eyesight, as well as the ability to distinguish the various colors. Skill in sports of all kinds is acquired by those who are able to make quick adjustments between eye and hand, who have what we call muscular control. People whose movements are slower have to practice long and hard to acquire skill in physical exercises, and some seem to be incapable of developing any skill in this kind of work.

Mental ability. Just as there are differences between people in their physical ability, so there are also differences in their mental ability. Variations in the mental ability of people are seen in the difference in creative work or mental tasks that they can perform. We do not know what causes these mental differences, but we do know that they exist. One person can learn in ten or fifteen minutes a lesson that another person will require an hour to learn. One person seems to have no difficulty with a problem in geometry, while another person cannot solve it at all. Interest plays an important part, however, in mental as in physical ability. If a person is interested in a subject, has read much about it, has worked hard at it and has some purpose in learning about it, he usually finds the problems which it presents easier to solve than does the person who only works at that kind of problem disinterestedly.

Some persons seem to be able to think easily about principles, laws, rules, and what we call abstract ideas. Other persons seem to be able to think best about specific facts, and things

which they can see, or touch, or handle, or, as we say, concrete things. One kind of thinking is just as necessary to get the work of the world done as is the other. Those who can master the art of abstract thinking are the ones who write the laws, become the mathematicians, scientists, authors, teachers, and philosophers. Those who do their thinking mainly in terms of things and concrete objects become the skilled craftsmen, the inventors, the builders, and the doers of the thousand and one necessary tasks to keep the wheels of progress moving forward. There are, however, those who are capable of doing both kinds of thinking equally well. They become the surgeons, artists, engineers, the architects — the plan-makers — and also the people who supervise the carrying out of plans and creative designs.

Social ability. In addition to physical and mental ability, social ability needs to be considered. Some persons have what we call a gift for "getting along" with others. They know how to make themselves agreeable. They can say the right word at the right time to make people feel at ease. They are capable of handling groups of people, and getting them to work together for a certain end or purpose. They can plan social, or religious, or political gatherings, and have them carried out harmoniously. Social ability is manifested in the success these people have in making friends, in causing other persons to like them and to want them in their clubs and other organizations. Those who become managers, executives, military leaders, political leaders, educators, and church leaders must have a great deal of social ability.

Fortunately, this is an ability that can be cultivated and acquired. It is possible to begin to cultivate social ability by taking part in school activities. The first benefit that comes from working with groups in school activities is that it enlarges one's acquaintance. The next thing is that taking part in activities helps us to forget ourselves in promoting the project, and ability to forget self is the beginning of real social ability. The development of self-confidence is another important result

of taking part in school activities. The one who expects to handle groups of people must develop a feeling of confidence in his own ability to meet and manage others successfully. Social ability is one of the large factors in successful leadership, and a person must estimate his own success in that line, when he is thinking of entering certain vocations.

Character traits. A few years ago the members of the engineering profession, through a committee, made a study of the qualifications and characteristics most essential for success in their field. Nine thousand engineers replied to the questions. The qualification which held first place was character. Among the character traits mentioned most frequently were those of bearing, temperament, disposition, sincerity, integrity, stability, trustworthiness, and loyalty to ideals. Bearing has to do with the manner in which one conducts himself in the presence of other persons. Temperament refers to a person's control over his emotions. An individual is called temperamental if he is given to sudden bursts of "temper," or of great excitement. Disposition refers to a person's tendency to act in certain ways which either attract or repel associates. One's disposition has most to do with the matter of making and keeping friends. Sincerity means the ability to do things without pretense or show. Integrity is just another name for honesty. Stability means that a person's character has good solid foundations. Trustworthiness means worthy of being trusted to perform a given task. Loyalty to ideals means that a person has definite principles to which he adheres with strong conviction of their worth.

Many other character traits, such as industry, courtesy, coöperativeness, and so forth, could be mentioned, but the ones given are sufficient to bring out the idea that success in life is just as dependent upon character traits as upon cleverness, physical strength, or social ability. Character can be developed. If we find ourselves lacking in certain traits of character, it is often possible to remedy the defects. By cultivating certain habits and attitudes it is possible to cul-

tivate desirable traits, and to suppress or eliminate undesirable traits.

2. *How to discover our special interests*

Discovery of special interests. We can discover our special interests by watching ourselves and taking note of the things which we especially like to do, the things we dislike to do,

A SCHOOL WOODWORKING SHOP

Here you can try yourself out for vocations connected with the building trades.

and the things which we do not care about either way, or, as they might be called, the things to which we are indifferent. Or we can ask our parents to tell us what they have observed about our likes and dislikes. Teachers and friends also can help us. The school counselor may have what is called an "interest blank" which gives lists of all sorts of things in which a person might or might not be interested. If

we follow the directions and answer the questions carefully the counselor can get a reasonably fair idea of our special interests. Particularly, if we talk over the replies which we make to the questions with him, and explain our reasons for liking, disliking, or being indifferent to various items on the list, he can help us to have a better understanding of our own kinds of interest that should be considered in selecting a vocation.

A person who dislikes very much being with sick people, or who is not interested in such studies as physiology, hygiene, and biology, probably would not succeed in the vocation of physician, surgeon, or nurse. On the other hand, the boy who is interested in nature study, who likes to make collections of all the different varieties of butterflies, or beetles, or other insects, may find that he could become a very successful entomologist; that is, a biologist who makes a specialty of insects. In the same way a great many of our special interests have a certain amount of value in helping us to decide which of several possible vocational trails to take. If we do a little careful thinking about those special interests which we seem to have had for a long time, we can throw much light on our life-career problems.

3. *How to find out about our aptitudes*

Physical aptitudes. Our physical adaptability can be discovered by doing things which require skill in the handling of our bodies. The way to judge whether we have a certain physical skill is to try ourselves out in competition with others. In running, jumping, swimming, boxing, wrestling, and in the playing of games we discover our physical abilities. When we find that some one is able to run faster than we can, we practice to see if we cannot do better than our competitors. Some persons are what are known as all-around athletes. They win first place in several types of contest. Most of us, however, are fortunate if we can excel in one line. These contests in which we engage to determine the winners are really physical-aptitude tests, in which the person who makes the highest

score sets the record and holds it until some one else does better. Athletic coaches are teachers who show their students the best ways of getting the proper athletic form, and how to use the muscles of the body to the best advantage. The contestant who would win contests and set new records, must have the ability to learn and be willing to practice according to the directions of the coach.

A great many vocations depend almost entirely on physical ability. Professional baseball, football, boxing, and golf call for great expertness, and an almost perfect coördination of mind and muscles. Those who earn a living in such callings usually begin by being expert amateurs, who spend much time in practice and develop to the highest point their natural physical abilities. In other vocations the physical qualities necessary to success can be discovered by observation, and we can then by physical examination, or from our experiences in similar situations, determine whether we would be physically capable of undertaking a given calling.

Mental ability. The mental ability of pupils can be tested in much the same way that physical ability is tested, that is, by contests in the various school subjects. Also, it is possible now to take tests worked out by psychologists, and from the results of these tests to get some idea of one's mental ability as compared with other persons of the same age and the same opportunities for study and learning. These tests consist of certain questions and "mental stunts," that somewhat resemble a track meet, except that the person tested does not know beforehand what the questions and stunts are going to be. It is not possible to practice for one of these mental tests, because one of the features of the test is the presentation of new situations to see how well the person tested is able to adjust himself to them.

Nearly every school system now gives these tests, and one can find out from the counselor whether one stood in the lower, the middle, or the upper third of those taking it. As these tests are now made up they give a good idea of one's ability to get on well in academic school subjects, but they do not tell us much about

certain other abilities which also have a part in our success, both in school and in vocations. The fact that a person is in the lower third of those who take such an examination, does not necessarily mean that he will not succeed in life. As a matter of fact, some persons who do not make a very good score on a group mental test succeed very well in a vocation, because they have other qualities that more than make up for those which were ranked poor in such tests.

Even without taking a mental test, it is possible for us to get an idea of our mental ability by comparing our own progress in school with the progress of others of our own age. That is, it may be that those who have had to repeat grades several times, and therefore are several years behind other children who entered school at the same time they did, do not learn the school subjects as easily as others do. If, however, they have been sick a great deal, or if they have moved about from place to place so that their schooling has been irregular, their slow progress through the grades may have nothing at all to do with their mental ability. Also, there are different kinds of mental ability. Some persons have a kind of mental ability that enables them to learn some subjects easily, while others who are poor in the first group of subjects can learn another type of subject without great difficulty. The important thing is to try to find the vocation that is best adapted to the kind of mental ability which one possesses. Teachers and counselors should be able to help pupils to discover the kinds of learning best suited to their learning capacity.

Mechanical ability. Sometimes mechanical ability is called mechanical intelligence. Those who have it are able to handle mechanical devices easily and skillfully. They learn quickly the processes connected with the running of all sorts of machines. The best way to test one's mechanical intelligence is to take work in the various shops of the junior high school, and find out by spending a few weeks in each type of shop whether you have mechanical ability. If you find that you do possess mechanical ability, it should be cultivated by acquiring skill in

doing the things that you are able to do best. After you have been the round of the shops you ought to be able, with the help of the shop teachers and the school counselor, to make up your mind whether or not you have special abilities in some particular field. Since this is an industrial age, and since about one third of the gainful workers are engaged in mechanical and industrial vocations, there are many and varied opportunities for the person who has mechanical intelligence.

The discovery of social intelligence. Social intelligence is measured by testing one's ability to meet a social situation. Whenever something is to be done which requires a group of people to work together, we call it a social situation. The person who manages the affair, in order to have things work smoothly, must exercise social intelligence. It is possible to estimate a person's social intelligence by watching him as he manages the details of some party, or entertainment, or perhaps a student body election. He sees that proper committees are appointed, and that a room for the party, or play, or whatever it is, is secured. He attends to the decorations, looks after the banquet, arranges the program, or sees that all these things are attended to by others. He gets hold of those who are indifferent and puts them to work, and he quietly takes care of all emergencies that arise to threaten the success of the enterprise. He proves himself to be a kind of "social engineer" who keeps all the machinery moving, avoids conflicts, and brings all elements together. The kind of ability required for social engineering is illustrated by the names of the qualities — tact, courtesy, sympathy, and resourcefulness.

There are no satisfactory question-and-answer tests for social intelligence. A person might say in answer to a question that he would do thus and so in a certain situation, but, in actual situations involving those elements, he might do the opposite. Our friends can tell us whether they think we have this kind of intelligence, but we know ourselves better than any one else does, so we can estimate our own abilities in this direction nearly as well as any one can judge them for us. It is

by handling groups of people, and finding out whether we succeed in getting them to work together in doing the things we want them to do, that we discover our social ability or lack of it.

Discovery of character traits. This type of self-analysis is more difficult than any of the other types which we have so far mentioned. Most people who are asked to answer the question, "Are you honest?" usually answer "Yes"; the honest people for obvious reasons, and the dishonest because the very fact that they were dishonest would incline them to be dishonest in answering the question. Then too, a person may be honest about some things and dishonest about others, so that it is really very hard to answer "yes" or "no" to such a question. It is not the answer anyway that makes a person honest or dishonest, but how he is in the habit of acting, day in and day out. Character cannot be judged by a single act. It is necessary to observe a person for a long time before we can form an estimate of his character, and then we cannot be absolutely sure that we are fair in our judgment.

The fact that it is difficult to judge character does not mean, however, that it is impossible. We must learn to estimate character because in our dealings with people in vocations, in social life, and civic life, we are constantly called upon to decide whom we will vote for, whom we will work for, and whom we will employ to work for us. In all these situations we need to be able to estimate character with a fair degree of accuracy. Otherwise we shall be imposed upon constantly. A very good method to follow is to think of some character quality, such as "dependability." Look up a good definition of the term. Then think of some person whom you know who has that quality in a high degree. Also think of others who have just an average amount of it, and of others who have very little. If you can figure out which of these persons you most nearly resemble in dependability you will have a fairly good notion of that character trait in yourself. Do the same with other character traits, such as accuracy, sincerity, trustworthiness,

and so forth, and you will have a better idea of your own strength and weakness in character than you could otherwise get. If you will follow up such a method of self-examination by a systematic effort to strengthen the weak spots which you have discovered, or already know to exist, you will have made a good start toward preparing yourself for a successful attack upon your life-work.

In this chapter we have tried to give you an idea of the different kinds of interests and abilities which you possess, and to suggest some of the many ways by which these interests and abilities may be discovered. Sometimes there are standardized tests which can be applied in a helpful way; sometimes our parents, friends, and teacher-counselors are able to give us valuable hints as to our capacities; and sometimes we are able to obtain a fairly good idea of our own special abilities by try-outs of various kinds in games, social activities, shops, or school subjects. We can also gain much valuable information about ourselves by being willing to compare our own interests, abilities, and character-traits with those of people about us. If we do this, not with the idea of priding ourselves on how clever, or how good, or how strong we are, but with the idea of trying to find out where the qualities which we possess can be employed to the best advantage, both for our own success and in human service, we shall find it a worth-while experience.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Shakespeare[1] said: "To thine own self be true, and it must follow as the night the day, thou canst not then be false to any man." Is that true?
2. Is there any difference in character illustrated by the fact that one boy becomes captain or leader by pushing himself forward and boasting of his ability, while another boy is made captain, without seeking the place, because his playmates recognize his fitness for the job?
3. Find some of the passages in the *Autobiography* of Benjamin Franklin which illustrate what is said in this chapter about hon-

[1] *Hamlet*, Act I, Scene III.

estly facing our weak traits of character, and then trying to build up and improve them in the right direction.

4. What should be your attitude when you find that some one else can run faster, hit harder, jump higher, or get lessons in Latin or algebra quicker than you can?
5. A girl in a high school made a very low score on an intelligence test. A great many others who made as low a score as she did were not able to complete high-school work. They found it too hard for them. This girl graduated from high school, then from normal school, and finally from college. How do you suppose she did it?
6. When a blind person learns to play the piano, or a one-armed person becomes a champion golf player, what character traits are being exercised?
7. What subjects should you take to help you find out whether you should become a skilled mechanic, or not? Which subjects give you an opportunity to discover whether you should become a doctor of medicine?
8. In what vocations does a person need to have a large amount of social intelligence?
9. A young man filled out an interest blank. His answers indicated that he had interests which would make him a good clergyman. He told his counselor, however, that he did not belong to a church. What other vocations call for many of the same abilities that a clergyman must have?

SELECTED REFERENCES

1. Beckman, R. O.: *Self-appraisal.*
2. Book, Wm. F.: *Learning How to Study and Work Effectively*, 208–23.
3. Fenton, Norman: *Self-Direction and Adjustment*, 93–104.
4. Fryer, Douglas: *Vocational Self-Guidance*, 3–10; 21–51.
5. Gowin, Wheatley, and Brewer: *Vocations*, 111-26.
6. Kitson, H. D.: *The Psychology of Vocational Adjustment*, 94–140. (For the teacher.)
7. Proctor, W. M.: *Educational and Vocational Guidance*, 64–72. (For the teacher.)

CHAPTER III

HOW TO COMBINE KNOWLEDGE OF SELF AND VOCATIONAL KNOWLEDGE IN SELECTING A VOCATION

1. *Occupational analysis*

How the Government helped ex-service men. A great many young men were disabled through wounds or sickness, or both combined, during the World War. Some had lost hands, some had lost feet, some had had tuberculosis, and others had been shell-shocked. If the disability was such that the man could not "carry on" in his previous vocation, the United States Veterans' Bureau undertook to reëducate him for some vocation in which he could earn a living in spite of his physical handicap. In order to secure this training it was not only necessary to have a disability, but to discover a suitable training objective, that is, to decide upon the kind of work which the man could do that would enable him to make a living, provided he had the necessary training.

Many thousands of ex-service men applied for this training. The Government established training centers in every State of the Union. Training officers were appointed to interview the men, help them find the new occupations for which they might wish to be prepared, and to supervise that training program. These men were called coördinators. The writer was coördinator of the Veterans' Bureau at Stanford University for three years, and at one time had one hundred and eighty men, or trainees as they were called, under his direction.

Planning the training. If the Veterans' Bureau doctors found that a man had a disability serious enough to make it impossible for him to engage in his old vocation, he was accepted for training. He then talked over with the coördinator

the kind of new vocation for which it would be best for him to be trained, that is, his training objective. In this interview the trainee and the coördinator tried to decide what vocation would be best in view of the trainee's physical handicap, his past schooling, his mental ability, and his present interests and abilities. It was necessary for the coördinator to know a great deal about many different kinds of vocations, and he also had the task of finding out all he could about the trainee: what his education had been; what jobs he had held; what success he had had in his various positions; what subjects he had liked best; with what subjects he had had the greatest difficulty in school; how he got along with people; his score on a mental test; and many other things.

When all this information was gathered it became necessary to combine the knowledge about vocations with the knowledge about the trainee, in the effort to advise him regarding the vocation for which he was to be trained. In trying to help the trainees to decide upon their training objectives, the coördinators of the Veterans' Bureau found certain blank forms and charts very helpful. One or two of these forms are printed here. You may find them useful when you come to the point of trying to combine your own knowledge of yourself, and the knowledge about vocations which you have gained in this course and elsewhere, in your effort to choose your vocation.

Occupational analysis. The first forms reproduced have to do with occupational training analysis. Each coördinator had a large volume of mimeographed sheets, similar to these. Each one contained a brief description of some vocation. When he found out what vocations the trainee was interested in, he would turn to these vocations as analyzed in his *Manual of Occupational Training Analyses and Training Outlines.* The first page dealing with any particular vocation was entitled: "Occupational Training Analysis," and the second page was: "Analysis of Abilities and Traits." Copies of both of these pages are shown on pages 33, 34.

FORM 1. OCCUPATIONAL TRAINING ANALYSIS

I. Employment Objective: *Radio Operator, 1st Class, 3d Grade.*

II. Nature and Conditions of the Work:

The radio operator stands watches on his ship at sea for the purpose of sending and receiving radiograms. He keeps a log of all messages handled, and abstracts information, etc., for his ship. Hours of duty depend upon ship regulations and the number of operators employed.

III. Requirements of the Occupation:

(*a*) *Physical:* Good ears and nerve control and ability to get about on shipboard; men with one arm or a leg amputated below the knee may qualify.

(*b*) *Mental:* Must be able to read, write, and figure; must have the equivalent of an eighth grade education. High-school education would be preferable.

(*c*) *Special abilities:* (See chart: "Analysis of Abilities and Traits.")

(*d*) *Experience:* Previous experience in clerical or electrical work, or both, would be valuable.

IV. Units of Training Leading to the Occupation:

1. Receiving and sending International Morse Code.
2. Theory and operation of Arc Transmitter.
3. Theory and operation of Spark Transmitter.
4. Theory and operation of Tube Transmitter.
5. Theory and operation of Vacuum Tube Transmitter.
6. Sending and receiving traffic.
7. Radio rules and regulations.
8. Pass examinations for license (United States Government Radio Inspector).

V. Time Required to Learn Vocation:

Six to eight months in radio course in school; one to three months in placement on job.

VI. Remarks: (*Licensing, Pay,* and *Line of promotion*).

1. *Licensing:* Operators must hold government licenses to be employable; grade of license depends upon experience.
2. *Pay:* Salaries range from $75 to $105 with subsistence, that is, board and room, while at sea, and up to $200 per month on work at land stations.
3. *Line of promotion:* Usual line of promotion is from second operator on passenger steamer to first operator on freight steamer; then to chief operator on passenger ship. Land employment, following sea experience, leads from operator to assistant chief, then to chief; or from radio electrician to engineer.

FORM 2. ANALYSIS OF ABILITIES AND TRAITS

I. Vocational Objective: *Radio Operator.*

II. Directions: Check the abilities and traits according to the degree essential for success in the above occupation. For example, if a high degree of adaptability is necessary, check thus √ opposite "adaptive" in column "1"; but if a low degree will suffice, put the check mark in column "5"; if average, put the check mark in column "3," and so on.

Abilities	Degree 1	2	3	4	5	Traits	Degree 1	2	3	4	5
1. Adaptive (self)	√					1. Accurate		√			
2. Analytical		√				2. Æsthetic					√
3. Artisan			√			3. Ambitious			√		
4. Artistic				√		4. Careful	√				
5. Concentrative	√					5. Cheerful			√		
6. Constructive				√		6. Coöperative				√	
7. Creative				√		7. Courteous		√			
8. Diagnostic		√				8. Deliberate				√	
9. Discriminative—color					√	9. Energetic			√		
10. " —tone	√					10. Earnest			√		
11. " —quality			√			11. Economical				√	
12. Directive			√			12. Generous				√	
13. Executive		√				13. Industrious			√		
14. Imitative			√			14. Motives high		√			
15. Initiative		√				15. Neat in person		√			
16. Manipulative		√				16. Neat in work			√		
17. Mechanical			√			17. Optimistic			√		
18. Organizing			√			18. Persevering			√		
19. Persuasive				√		19. Poise		√			
20. Portrayal			√			20. Progressive		√			
21. Routine		√				21. Prompt	√				
22. Scope — large		√				22. Reliable		√			
23. Systematizing			√			23. Sociable			√		
24. Teaching				√		24. Sincere			√		
25. Work with people			√			25. Sympathetic				√	
26. Work with materials			√			26. Tactful			√		
27.						27.					
28.						28.					
29.						29.					
30.						30.					

Write in other traits, which apply to the above vocation, and which you think should be included.

Checked by .....

Knowledge of the field .....

The check marks in the chart (Form 2) were placed as shown after a number of training officers, familiar with the work of "radio operator," had agreed upon the "abilities" and "traits" most necessary to success in that vocation. This chart was kept on file as a key chart for the use of the coördinator. The trainee was given a blank chart and told: "Check the abilities and traits according to your own best judgment of the degree to which you possess them. For example, if you have a high degree of adaptability, put the check mark in column '1' opposite 'adaptive,' and so on." When the trainee had checked the chart to indicate his own traits and abilities, he and the coördinator compared the "key" chart with the trainee's "self-analysis chart." The coördinator understood, of course, that this attempt at self-analysis on the part of the trainee was crude and inaccurate, but it served as an excellent basis for further discussion of the vocation under consideration. It also enabled the coördinator to give the trainee much more accurate information, and much more helpful advice than would otherwise have been possible.

An exercise in self-analysis. An interesting exercise in a class studying occupations would be to have the "Analysis of Abilities and Traits" chart mimeographed, with enough copies so that each student could have four or five. One could be filled out by your father or mother; one by some friend, who knows you very well; one by your home-room teacher; one by the teacher of the vocations class; and one by yourself. All of these could be handed in to the counselor or vocations teacher who could make for each member of the class a "composite" abilities-and-traits chart. In the same way all of those in the class, who are interested in the same vocation, could take copies of the "Analysis of Abilities-and-Traits Chart," with the directions as given on the copy above reproduced, and after talking with persons engaged in that vocation check the traits and abilities necessary for success in it. Then you could compare your own composite chart with the chart of the vocation in which you are interested and see how they match.

It would not be wise to take too seriously the results of the exercise above suggested, but it would serve to illustrate the use that may be made of such analysis-charts and provide interesting material for discussion in the class. It would also give those who are thinking about choosing a vocation a better idea of the many different items that must be considered before a choice is made. What you would learn about yourself by talking over with the counselor the abilities-and-traits charts which your teachers and friends had filled out, in your own case, would also be very helpful. You might discover that you had some good traits that you did not realize, or some poor ones that you had not detected. You know Robert Burns, the Scotch poet, said:

> O wad some Power the giftie gie us
> To see oursels as ithers see us!
> It wad frae monie a blunder free us,
> An' foolish notion.

In selecting a vocation it is quite necessary to be able to see ourselves as others see us. We are going to be dependent on others for employment, and what they see in us determines what they think about our ability to perform the work which they have to offer.

2. *Examples of tests used in selecting vocational objectives*

Music-ability tests. In the Sacramento, California, junior high schools the *Seashore Tests of Musical Ability* are given to all children who wish to specialize in music. Those who make high scores on the test are placed in a group by themselves. Those who make average scores are put in another group, and those who make low scores are put in still another group. Then the music teacher observes carefully to see if those in the first group are able to learn music better and more rapidly than those in the other groups. It sometimes happens that a pupil, who tested low in the music test, is really able to learn music as rapidly and as well as those in the upper group. Such students

then are shifted to the group where they belong. It is only those in the upper group who are encouraged to take up music as a profession. The others learn to play and sing, according to their ability, but it would probably be a waste of time and money for them to hope to compete with professional musicians in making a living.

Among the Veterans' Bureau trainees, under the writer's supervision, was a young man who had lost his right leg in the War. He had been a teamster before the War, and could not go back to that vocation. He wanted to become a professional musician and teacher of music. He was given a trial at music lessons, but did not do very well. We then gave him a *Seashore Musical Ability Test.* He made a good score in "rhythm," but very poor scores in "harmony," "tone discrimination," and "pitch." The examiner said he would never make a music teacher, but that he might learn to play in a jazz orchestra. He was not satisfied with the test and wanted another trial at the music lessons, so we gave him a try-out of three more months. At the end of that time he acknowledged that he had very little musical ability, and accepted training as a "salesman of electrical supplies." He is now employed by an electrical supply company and is making a comfortable living.

Mental-ability tests. Nearly two million men in the American Army were given mental-ability tests, now known as the *Army Alpha Intelligence Test.* After the War was over, psychologists took some thirty-five to forty thousand of these test records and arranged them according to the vocations in which the men who took them were engaged at the time of their enlistment. The scores of all the men in each vocation were then arranged in order, from lowest to highest. The middle case in each group was called "the median score" for that group, and the middle one half of all the cases in a given vocational group was called the "middle fifty per cent." The following distribution shows the way the groups were finally arranged, on the basis of the scores made on the *Army Alpha Intelligence Test*:

	Median Score	Middle 50 per cent
1. Unskilled laborers	35	21 to 63
2. Semi-skilled laborers	42	23 to 70
3. Skilled laborers	61	26 to 95
4. Business and clerical	96	58 to 145
5. Professional	140	98 to 184

From the scores indicated under "Middle 50 per cent," it will be seen that 25 per cent of the unskilled workers made scores below 21, and 25 per cent made scores higher than 63. The professional workers, on the other hand, had 25 per cent who made scores less than 98, and 25 per cent who made scores higher than 184. The results of these tests show that the more schooling and school training necessary to prepare for a vocation the more mental ability a person has to have in order to engage in that vocation. It also appears that, in every vocational group, probably half of the persons employed have mental ability enough to engage in the work of the next higher group. This means that there are a great many other things to think of, when selecting a vocation, besides mental ability. Just because a person makes a high score on an intelligence test is no reason for thinking that he should prepare for a profession. Neither is it a good idea to assume that all those who make low scores should become unskilled laborers.

Two cases will illustrate what has just been said. There were two of the Veterans' Bureau trainees who wanted to become mining engineers. One of them made a score of 205 on a mental test, and the other made a score of 105. The one who made a score of 205 had never had to work very hard, either to make a living or to make good grades in his school subjects. The one who made the score of 105 had had to go to work at 14 years of age to help his mother, who was a widow. He was nearly twenty when he finished high school, and about twenty-four when he entered college. The bright one entered college at the age of seventeen. He was, however, very changeable. Before he decided that he wanted to be a mining engineer he had thought that he wanted to be several other things.

CANNERY, SHOWING CAN-TOPPING MACHINES IN OPERATION

He was also a very egotistical fellow, very quarrelsome and sullen if he could not have his own way. He took a violent dislike to some of his teachers and would not work for them. The result was that he failed less than a year after he got into the school of engineering. The "almost-dull" student liked his work, studied hard, did not complain about long assignments, but worked hard and mastered them. He did not make a brilliant record; on some subjects he barely passed, but he stuck to the course until he finally got his engineering degree, and he now is employed as oil geologist for a petroleum company. On mental ability alone the bright one had the better chance, but on character-traits, in addition to having just enough mental ability to master the necessary preparation, the less brilliant student won out.

Character-rating scales. Since character-traits are con-

FORM 3. RATING SCALE USED BY A LARGE UNIVERSITY IN DECIDING UPON STUDENTS WHOM ITS COMMITTEE ON ADMISSIONS WILL ACCEPT

In the space below please rate the applicant in terms of comparison with other students whom you know who are applying, or have applied in the past, for admission to universities. After the name and description of each trait place a cross (×) on the horizontal line at a position that seems to you to represent your estimate of the candidate with respect to that trait. Use *any* position along the line and remember that these ratings are in terms of university applicants, *not* of unselected high-school graduates.

(Underline any special quality or characteristic to which particular attention should be called.)	Unsatisfactory as university applicant	Questionable university material	Below average of university applicant	Average university applicant	Upper 25% of a group of 100 or more applicants for university admission	Upper 5% of a group of 100 or more applicants for university admission
1. Scholarship						
2. Personality (Personal strength and attractiveness, capacity as a mixer, appearance and manner)						
3. Industry (Energy, perseverance, application to work and interest in it)						
4. Judgment and common sense (Soundness of judgment, ability to size up situations, fair-mindedness, tact)						
5. Reliability (Dependability, promptness, accuracy)						
6. Initiative (Originality, enterprise, resourcefulness)						
7. Coöperation (Willingness to work with others, group loyalty, ability to understand people)						

8. Native ability .....
(Inborn capacity, intellectual alertness, ability to reason quickly) .....

9. Leadership .....
(Ability to inspire and lead, to command the loyalty of others, to master a difficult situation, to make things go)

10. Physical vitality .....
(General good health, robustness, fondness for outdoor sports)

11. All-around promise as a student .....
(Taking into account character, personality, intellectual ability, etc.)

What special interests has the candidate, aside from regular school activities (social, literary, practical, artistic, musical, etc.)?

What positions (offices) of responsibility and honor has the candidate held (in school or out)? how filled?

What (if any) psychological examination (intelligence test) has the candidate taken? .....

When? ..... What was the candidate's rating: point score? ..... I.Q.? .....

Brief statement as to why, and in what particulars, the candidate is (or is not) regarded as exceptionally qualified for successful college work and entitled to consideration on the basis of superior fitness.

(This statement may be continued on the reverse side of this sheet)

Date ..... [Signed] .....

[Position] .....

sidered important by every one who counsels young people in regard to their life-work, you may be interested in looking over a rating scale that students who wish to enter a certain university must have filled out, by their teachers and friends, and sent to the registrar with their high-school record and personal application blank (Form 3).

Another rating scale, used by a high-school principal in advising pupils as to their choice of a life-work or their educational plans, also is shown (Form 4).

A rating scale similar to the one just given is used by another high school in recommending its graduates to various business men for employment. The principal of this latter high school reports that the business men are not only interested in the scores on the blank which refer to reliability, industry, judgment and common sense, and coöperation, but that they are anxious to know about scholarship. One company, a nationally known corporation, has a standing offer to take the five male graduates of that high school, each year, who have the highest standing in their studies and are rated as satisfactory in the other traits given on the blank. This fact is an indication that in making plans for one's life-work it is desirable to think over one's equipment in character traits, and to see if those traits in which one is inclined to be weak cannot be improved, or brought up to a place where they would receive a higher mark on a rating scale.

General information blank. The person in the junior or senior high school who will be able to help you most in combining your knowledge of vocations with your knowledge of yourself, in the task of selecting a vocation, is either the principal or the school counselor. There are certain items of information which your counselor should have in addition to those about your scholarship, mental ability, character traits, and special aptitudes. Some of these are indicated on the blank form for recording educational and vocational information shown in Form 5.

FORM 4. CHARACTER RATING OF SENIORS IN A LARGE CITY HIGH SCHOOL

Instructions to Teachers: (1) Study the key to the six characteristics listed below; (2) Score the senior students listed on as many of these characteristics as you feel you can; (3) Use the five-point scale for scoring, i.e., "1" for the highest; "5" for the lowest, and so on.

Key to quality	Characteristics					
	Thoroughness	Time efficiency	Overcoming difficulties	Behavior	Leadership	Attitude toward work
(1) Highest quality	Completely finishes work	Does high type of work in minimum of time	Able and willing to devise ways and means of overcoming difficulties	Respect for law and for rights of others. Actively helpful	Distinctly a leader of his classmates	Attacks tasks quickly, cheerfully, and firmly
(2) Above average quality	Stops just short of a good finish	Works slower than his abilities warrant, but does good work	Has ability to organize but stops just short of complete success	Behavior satisfactory in every way but not very positive	Leads well if not confronted with serious opposition	Starts well but loses interest before end is reached
(3) Only average quality	Does just enough to get by in a course or on a given project	Has mediocre ability to work quickly	Very little ability for meeting and overcoming difficulties	Fairly dependable but not greatly concerned about matters of conduct	Passive, neither leads nor opposes	Works without very much real interest
(4) Below average quality	Usually just below the minimum amount of work required	Manages to finish work but is usually late handing it in	Needs careful directions in doing ordinary tasks or assignments	Weak, easily led astray. Not interested in doing the right thing	Tends to antagonize others	Shows strong dislike of assigned tasks
(5) Poorest Quality	Usually way below the normal standard of achievement	A time waster; all work handed in late	Works aimlessly and without plans, even when directions are carefully given	Delinquent tendencies. Deliberately plans wrong conduct	Positively repels others	Refuses to work. Lazy

Sample Scorings, Based on above "Key"

Names of students	Thoroughness	Time efficiency	Overcoming difficulties	Behavior	Leadership	Attitude toward work
Jane Doe...	1	1	1	1	3	1
Richard Roe	2	3	2	1	3	2
Mary Smith	4	5	5	4	4	4
John Brown	3	4	3	2	3	2

FORM 5. EDUCATIONAL AND VOCATIONAL INFORMATION BLANK

Name.....Sex.....Age, last birthday....
Last First Middle Male or Female

Date of birth.....Place of birth.....
Month, day, year

Class in School.....Course.....
College prep.; vocational, etc.

Present Address.....City.....Phone.....
Street and number

Occupation of father.....Occupation of mother or guardian
Just what does he do?

.....

Do you expect to complete Junior High School?.....; Senior High School?.....; College?.....; Normal School?.....; Business School?.....; or other?.....

What do you expect to follow as a vocation? That is, what do you intend to do in order to make a living after you have finished school? Mention first choice.....; second choice.....

Is there any one in your immediate family who does now or has done the type of work which you have put down as your first or second choice? .....If so, what is the relationship? Father, brother, uncle, cousin, etc.....

What vocation does your father want you to follow?..... your mother?.....

Have you ever asked advice about your vocation from any one?..... If so, of whom have you asked it?.....What advice was given to you at that time?.....

Underline once "———" the activities in which you have taken part, underline twice "═══" the ones you like best: School band, orchestra, glee club, football team, baseball team, track, tennis, volley ball, hockey, debating, school paper, dramatics, swimming, etc. Write in other activities not mentioned.....

Do you play a musical instrument?.....What instrument?.....

To what clubs and societies do you belong in junior or senior high school?

.....

Do you belong to any organizations outside of school?.....

.....

Do you work before or after school or week ends?.....What do you do?

.....Where do you work?.....

What hours do you put in?.....What compensation?.....

How do you spend your leisure time, i.e., when not in school, or working for wages?.....

Give the names of one or two of your best friends or pals.....

.....

Give the title of two books which you have read recently.....

.....

What magazines do you read regularly?.....

.....

What school subject is easiest for you?.....What subject is hardest?.....What subject do you like best?.....

The teacher of your vocations class may have the above blank form mimeographed, and ask every member of the class to fill it out. A committee, made up of members of the class, can then classify the different items, such as number who expect to enter certain vocations, as first choice, or second choice, and so forth. Or the teacher may want to work up the information, without using any names, and keep the blanks on file for reference in giving educational and vocational advice to the members of the class. This should be done early in the course. It will be of interest later on to each member of the class to see whether they retain the same interest in the vocations mentioned as first and second choice, after they have completed the study of many other vocations.

Further study of this book. In the chapters which follow this, a great many different vocations will be mentioned. Some of the more important ones will be briefly described. Books and magazine articles, where further information about the vocations mentioned can be found, will be suggested. Also there will be "seek-further questions and suggestions," to help the reader in his search for a better knowledge of the vocations in which he may become particularly interested. The whole book could easily be employed to tell about just one of the more important vocations, but not every member of the class would want to spend so much time on that particular vocation. That is why so many are described briefly rather than all the time spent on one or two. The individual members of the class, when they find the vocation or vocations in which they are most interested, should concentrate on them and find out all that they possibly can about those fields of human effort. Make a careful study of a vocation, make a careful study of your own interests, aptitudes, and abilities, and then combine these two kinds of information wisely and you will be able to make a choice of your own life-work that may prove to be both permanent and satisfactory.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. A Veterans' Bureau trainee who had been gassed in France, and who had recovered from a mild attack of tuberculosis, wanted to take up the study of Chemistry and was permitted to do so. What was wrong about the vocational guidance he got from his coördinator?
2. Another trainee wanted to study in college to be a teacher of Mathematics. In the group intelligence test (Army Alpha) he made a very poor score in Arithmetic, but his total score was high. Was he a good risk on which to spend several thousand dollars in training for becoming a teacher of mathematics?
3. In the above case it was the Government, affectionately known as "Uncle Sam," who would have been wasting the money if it had been wasted. Suppose you spend several thousand dollars training for a vocation for which you have no aptitude, who suffers the loss?
4. Have three members of the class, who are all interested in the same vocation, arrange to observe carefully some person who is engaged in that pursuit, and report back to the class; each one recording only his own observations or the result of his own questioning. Notice how the reports differ in detail. This exercise will illustrate how much there is to observe about every vocation, and how important it is to see it from different points of view.
5. In an Eastern high school a large class of girls was studying vocations. The teacher asked them to write down the vocation in which they would like to engage upon completing school. More than half of them said they wanted to be stenographers and typists. After they had taken a full semester of "vocational civics," only one fourth of them still wanted to be stenographers and typists. What had happened to cause the change of attitude?
6. If you had been the adviser of the young man who wanted to be an oil geologist, and who also made a score on the intelligence test of 205, how would you have handled the case to prevent his failure to pass?
7. Can you mention other character traits, not given on the character-rating blanks, printed in this chapter?
8. What items, suggested by your own experience, would you add to the general information blank?

SELECTED REFERENCES

1. Fryer, Douglas: *Vocational Self-Guidance*, 69–76; 375–79.
2. Gowin, Wheatley, and Brewer: *Occupations*, 336–48.
3. Hill, Howard C.: *Vocational Civics*, 159–65.
4. Kitson, H. D.: *How to Use Your Mind.*
5. Kitson, H. D.: *The Psychology of Vocational Adjustment*, 53–73. (For the teacher.)
6. Myers, George E.: *The Problem of Vocational Guidance*, 1–21. (For the teacher.)
7. Proctor, W. M.: *Educational and Vocational Guidance.* (For the teacher.)

CHAPTER IV

AGRICULTURAL VOCATIONS INVOLVING GENERAL FARMING AND STOCK-RAISING

1. *Nature of the work*

Changing character of farming. When Thomas Jefferson was President of the United States, more than ninety per cent of the gainful workers were engaged in agricultural vocations. Jefferson himself was a scientific farmer, just as George Washington had been before him. Jefferson wrote many letters and articles on various aspects of farming, and was most happy when at home on his great estate at Monticello. Until 1920, there had always been more people engaged in agricultural pursuits than in any other group of vocations. When the census of that year was taken, however, it was found that, for the first time in our history, agriculture had yielded first place to the manufacturing and mechanical industries — agriculture reporting about 11,000,000 workers, and manufacturing reporting about 13,000,000 workers. The decrease in the number engaged in agricultural vocations, however, occurred in the number of laborers. The number of individual farm owners, renters, and managers had increased during the same time by nearly 250,000. The total value of farm property also had increased from $40,000,000,000 to $77,000,000,000 between 1910 and 1920, and there had been an increase of 87,000,000 acres of farm land under cultivation. During the same time there was an increase in the crops of corn, wheat, and oats of 830,000,000 bushels.

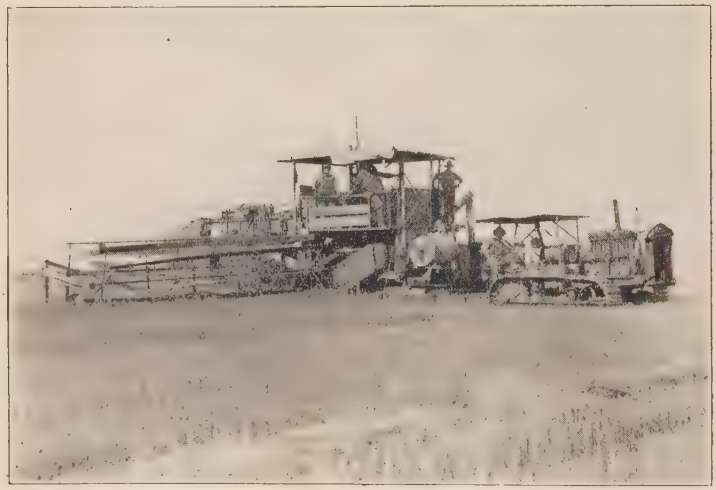
Although, therefore, the number of agricultural laborers had been considerably reduced, the volume of agricultural production had been greatly increased. This result was made possible by the increased use of labor-saving machinery on the farms. As wages in the manufacturing industries increased, men were attracted to employment in the industrial centers and left the

HORSE AND MULE POWER METHOD OF PULLING COMBINE HARVESTER

farms. The farmers were compelled to replace hand labor by machines. Instead of cutting the grain with a reaper and self-binder, then gathering the bundles and stacking them to be threshed in the fall, a combined harvester was secured. This machine, drawn by a tractor, can cut, thresh, and sack the wheat on sixty acres of land in a single day, and requires only from four to eight men to operate it. Four or five times as many men and many different kinds of machines were involved in cutting, binding, stacking, and threshing the grain under the older methods.

Agricultural vocations are not diminishing in importance, but they are changing in character. More and better machinery is being applied to farm tasks, and farm operations are becoming increasingly skilled, requiring scientific training and the possession of larger amounts of capital for successful operation. The picture of "The Man with the Hoe" is no longer a true picture of the farmer in civilized countries. Neither is the vaudeville representation of the "clod-hopper," "the hayseed,"

or the "country bumpkin" a true picture. The successful American farmer to-day is a progressive business man who has his automobile, his telephone, his daily paper, with its market reports and general world news, and who keeps himself up to date in farm problems by taking the best farm journals, and by reading government bulletins pertaining to his special lines of agriculture. He also takes an intelligent interest in social and political problems.



TRACTOR METHOD OF OPERATING COMBINE HARVESTER

This one machine cuts, threshes, and sacks the grain. Thus four or five men are able to do work formerly requiring the services of forty or fifty

Diversified farming. The general farmer is the man we think of as raising the great staple food crops, such as corn, wheat, oats, barley, rye, and the crops from which clothing materials are made, such as cotton, flax, silk, and wool. His work consists of plowing, sowing, reaping, and marketing his grain, vegetable, or fruit crops, and of feeding, caring for, improving, and marketing his live stock. The work is what is

called seasonal; that is, there are certain times of year when each type of activity is carried on.

The plowing usually comes in the autumn, after the crops have been harvested and the autumn rains have started. Sometimes, however, it is postponed until spring, after the frost is out of the ground and just before the planting season. The ground must be turned over by the plow, and then broken up or pulverized with the harrow or disc. Plowing on level land, or on rolling land that is not steep, is usually done with a tractor pulling a "gang" plow which makes from two to four furrows at once. The drag or harrow is often attached behind the plows, thus making one operation out of what was formerly two operations. One man is able in this way to prepare more ground in one day than it was formerly possible for him to prepare in ten to fifteen days, when he used the single "walking plow" pulled by horses.

Seeding is now accomplished in a wholesale manner by the use of mechanical devices. Formerly the "sower went forth to sow" by broadcasting the grain in handfuls over the prepared ground, and later "rolling" or "harrowing" it in.

The general farmer usually has several different kinds of crops to look after, such as his grain crop, his hay crop, his potato crop, his fruit crop, etc. He also rotates his crops. Where he planted grain one year, he will raise potatoes or vetch, or some other crop which take a different ingredient out of the soil, the next year. In this way he avoids exhausting the soil. Where one crop only is grown year after year, fertilizer must be employed, or the soil must be summer-fallowed, that is, allowed to rest every other year.

Not only must the general farmer know about soil cultivation, proper seed time, and when and how best to harvest his various crops, but he must also know how to handle and give "first aid" to the many different kinds of machinery necessary for successful present-day farming. What with tractors, gang plows, seeders, hay-making machines, headers, binders, and combined harvesters, not to mention automobiles and trucks,

the farmer must be at least a semi-skilled mechanic. Then there is the building problem. He must know the best way in which to build barns, cow-sheds, chicken-coops, hog-pens, and the many other types of farm buildings. Windmills, gasoline and electric pumps, and other means of securing a water supply for domestic uses, for stock or for irrigation, also must become familiar to the general farmer.

The general farmer is one of the busiest individuals in the world, but his tasks are so varied and he has so many lines of activity that monotony is not one of his complaints. He needs to be constantly on the alert against insect pests. Floods, frosts, hot winds, and unseasonal weather of all kinds must be contended with. If by skill and good fortune he pulls his crops safely through these besetting dangers, he yet must meet the uncertainties of the market, both as to price and demand. Hence he must not only be a scientific agriculturist, a mechanic, a builder, and a good weather prophet, but he needs to be a shrewd business man as well. There is room in general farming, therefore, for every kind of ability possessed by man. The city resident who thinks of the farmer as an unintelligent drudge would revise his opinion, if he could follow a successful farmer through one season's work. He would find that intelligence, physical energy, resourcefulness, courage, and business ability of a high order are qualities which the successful American farmer exhibits in his daily work.

The stock-raiser. Nearly every farmer has some live stock — a few horses, cattle, sheep, pigs, or poultry. Some farmers specialize in one or more of these varieties of live stock, and raise only such forage crops as may be most economically used in feeding the kind of stock which the farm supports. The importance of stock-raising can be judged from the fact that the value of live stock on American farms, in 1920, was $8,000,000,000, and the number of acres devoted to pasturage was 408,000,000, or 20,000,000 acres more than was devoted to crop purposes.

Stock-raising has always been an attractive vocation to man-

kind. The taming or domestication of animals was man's first step in civilization. The finding of pasture for his flocks and the protection of his flocks brought about the necessity for co-operation and organization. Herds are movable and can be hidden from an enemy, while crops are harder to protect from devastation because they must be left behind when the farmer flees to a place of safety. The crop-raising type of agriculture almost always follows the stock-raising type in order of development. After a while, however, they tend to be combined, at least to a point where the stock-raiser also cultivates land on which to grow hay, grain, or appropriate root crops as feed for his live stock. A few of the many varieties of live-stock farms will be discussed.

The horse- and mule-raiser. With 25,000,000 automobiles in use in this country, as well as the multitudes of trucks and tractors, it might seem that there would be no further use for horses and mules, but that is not the case. There are still over 15,000,000 horses and 6,000,000 mules in use in this country, with a total value of $1,500,000,000. We think the horse is disappearing because he has practically disappeared from the roads and highways as a puller of buggies and wagons, but there are still many types of farm work which cannot be performed by trucks and tractors. Also there are many varieties of work which can still be more economically done by horses and mules than by gas-power machines. It will be a long time, therefore, before horse-raising becomes a lost art.

The kinds of horses most sought after now are the farm work horse, and the draft horse for the hauling of heavy loads under conditions unfavorable for the operation of big trucks. This type of horse is bred to better advantage on farms, where it is possible to raise the appropriate feed grains and grasses, and where there are adequate buildings to protect it from severe weather. The range horse is the type that is rapidly disappearing.

The raiser of beef cattle. Most of the romance of the stock-raising industry has centered around the raising of beef cattle

on the great ranges of the Southwest and the Far West. Immense herds of cattle roamed these great stretches of open prairie, with very little necessity for attention, except at certain seasons of the year when they were "rounded-up" for purposes of counting and branding, and for the sorting out of those which were to be shipped to market, or brought to the home farm for fattening.

The taking up of land for farming, either dry or irrigated, has greatly restricted the areas where cattle may still be allowed to roam or "range." Cattlemen have been compelled to buy up thousands of acres of cheap land, or to pay fees to state and national governments for pasturage in forest reserve and other public-land areas. It has also become necessary to provide for feeding beef cattle during a part of the year. This necessity of owning or leasing his pasture land, and raising or buying sufficient feed to carry his cattle through the winter, means that an individual cattleman will have a smaller herd than would have been the case twenty-five years ago. It also means the application to beef-cattle-raising of more scientific methods, and the securing of better results. Returns are likely to be surer and results better than under the conditions which prevailed in the days of the open range. The stockman to-day must know the best breeds to buy, how to take care of them, how to fatten them, and how to market them to the best advantage. His work is more intensive, and requires greater skill than ever before in order to insure success.

The raiser of dairy cattle. Nearly every general farm has a few milch cows to provide milk and butter for the farmer's family table, but since the total value of dairy products, in 1925, was $2,800,000,000, it will be seen that a great many persons must specialize in the raising of dairy cattle. As a matter of fact there are nearly as many dairy cattle as there are beef cattle in the country. The methods of handling the two kinds of cattle are very different. Milch cows must be carefully looked after, and scientifically fed and housed. The closest attention must be given to the breeding and selection of stock,

MODERN DAIRY FARM, SHOWING SILOS, BARNS HAYSTACKS, AND PASTURE

in the light of quantity and quality of milk produced. Good pasture must be provided on the dairy farm itself, because dairy cattle cannot be let out on a range. The right kinds of green grass in spring and summer, and of fodder and silage in autumn and winter must be secured, alternated with proper amounts and kinds of grain. Barns and stalls must be built to give cleanliness, warmth, and ventilation, and everything must be done to insure the health and well-being of the dairy herd. In the agricultural department of nearly every State there is a dairy commissioner who looks after the inspection of dairies, and who tries to see that public health is not menaced by inferior dairy products.

The dairy farmer keeps herds that vary in size from seven or eight to several hundred cows. Too small a dairy herd does not justify the farmer in giving all of his time to milk products. The work on the dairy farm demands constant attention, because cows must be taken care of and milked regularly. The dairyman who attends to business, and takes pride in keeping his herd in a cleanly and sanitary condition, usually secures a

high rating from the inspectors, and is assured of a high class of patronage. Pasteurized or certified milk is delivered to customers in bottles, morning and evening. Sometimes, however, all the milk is transported in cans or large tanks to creameries or cheese factories, where it is made into butter or cheese. Again it may be delivered to companies which evaporate or condense it and put it up in tin cans, so that it will keep indefinitely and can be shipped to any part of the world. Large quantities of milk also go into the making of ice cream. The dairy farmer thus has many choices as to the particular line which he will follow in his business. If he is near a city he may elect to deliver his milk directly to his customers. If at considerable distance from a city he may choose to send his milk to the creamery or deliver it to a near-by condensed-milk factory, or cheese factory. His market is usually steady, and his collections are made on a monthly basis. This gives him an advantage over the wheat or grain farmer, who has to arrange his finances on a yearly basis, often finding it necessary to borrow money to pay current expenses until crops are harvested and sold.

The poultry-raiser. The humble hen makes a very substantial contribution to the prosperity of the American farmer. In 1925, there were nearly 700,000,000 chickens, and the egg production amounted to nearly 2,000,000,000 dozen. Chickens and eggs together, during that year, reached a value of approximately $1,000,000,000. Every farm has its poultry yard. The farmer's wife usually takes care of the chickens, ducks, and turkeys, and has the income for her "pin money," as it is called. Poultry-raising, however, has become a very important industry, as the above figures would indicate, and there are parts of the country where whole sections are given over to chicken "ranches." The attractive part of the chicken business, to many people, is that it requires only a few acres of ground. A very profitable business often can be developed on one acre, where scientific methods of housing and feeding are practiced.

CHICKEN RANCH, WITH FLOCK OF WHITE LEGHORN HENS

Nearly every one has a feeling that chicken-raising is very simple, and that almost any one can succeed at it. The fact is that raising chickens on a large scale is a very difficult and precarious business. Little chicks are hatched in incubators by the thousand, and unless the food, warmth, and care are precisely what they should be they die by the thousand also. It costs a considerable sum to feed a chicken until it has reached the egg-laying stage, or is ready for market as a broiler. Careful attention must be given to all of these details to make sure that the venture will result in a profit, rather than in a deficit. If the poultryman can raise part of his own grain, alfalfa, sunflower-seed, or kale, he stands a much better chance of making a profit than if he has to buy everything in the way of feed for his poultry. Also if he can arrange to furnish some hotel, restaurant, or commission house with perfectly fresh eggs, and broilers that are just right, he is able to secure prices above the market price and has a constant demand for his product.

The beekeeper. The industrious bee produced about 50,000,000 pounds of honey, in 1925, and thereby gained the right

to be counted among the Nation's wealth-makers. Most of this honey is raised by people who have a few hives of bees as a side line to general or fruit farming. There are regular bee farms, however, where hundreds of hives are kept and the farmer, or apiarist, as he is called, devotes all of his time to bee culture.

It is a fascinating kind of work, to those who make a scientific study of the life habits of the bee. As in the case of live stock, study of the problems, care in securing the best varieties, and skill in handling bring results in the form of increased production and better quality. Beekeeping is especially profitable in sections of the country where the flower and fruit-blossom seasons are long. This type of farming is being taken up by an increasing number of women.

Sheep-raising. The sheep was one of the first animals domesticated by man. From its fleece he secured the wool for his clothing; from its skin he made his shoes and sandals; and its flesh provided him with his most constant item of diet. In this country, even at the present time, when grazing ranges have been greatly reduced, and other fabrics have taken to a large extent the place of wool, sheep-raising still is an important part of the country's live-stock industry. According to the report for 1925, something over 40,000,000 sheep were raised with a value of more than $100,000,000. Only two other countries — Australia, and Russia — raised more sheep than are raised in the United States.

Sheep-raising is most profitable where there are still large open ranges, as in Texas, Wyoming, and Montana, but many farmers are finding that a small band of sheep, well tended and raised for mutton, as well as wool, may become a paying investment. Tending sheep is a lonesome sort of work, since the large herds are kept on the prairies or in the mountains, but the sheep-herder makes friends of his faithful dogs, and finds plenty of interesting work to do in keeping his helpless charges protected from bears, mountain lions, or prowling coyotes.

Hog-raising. Due to the popularity of certain meat products derived from curing the meat of the hog, the business of

raising hogs is one of our chief agricultural vocations. Fifty million swine were found on the farms of this country, in 1925. No other country raises so many. Brazil and Germany are tied for second place in the number of swine reported. Hogs have voracious appetites, and, where it is difficult to find fences that will hold them in, they are often kept and fed in pens, or small enclosures. Farmers often find it more profitable to feed their corn to pigs, for purposes of fattening, rather than to sell the corn to the millers. Skim-milk, turnips, potatoes, and peanuts also are often fed to the hogs, because there is a steadier demand for hog meat, and at fairly good prices, than for almost any other farm product.

2. *Opportunities, training, and income*

Numbers engaged. The numbers engaged in the types of farming which we have just been considering are as follows:

Vocations	Total	Men	Women	Grand Total
General farmers	6,004,580	5,757,327	247,253	
Farm laborers	3,905,395	3,116,784	788,611	
Farm foremen	79,018	65,251	13,767	9,988,993
Dairy farmers	118,813	114,867	3,946	
Dairy laborers	63,367	60,770	2,597	
Dairy foremen	2,479	2,339	140	184,659
Stock farmers	77,559	74,922	2,637	
Stock farm laborers	56,766	55,368	1,398	
Stock farm foremen	4,894	4,800	94	139,219
Poultry-raisers	14,116	11,792	2,324	
Poultry yard laborers	4,599	3,587	1,012	18,715
Apiarists (bee-raisers)	2,893	2,759	134	2,893
Totals		9,270,566	1,063,913	10,334,479

The great majority of agricultural workers are found to be general farmers, or general farm laborers, and about one out of ten of these workers is a woman. Women workers on farms, however, are not very often found in the fields in this country,

but are engaged in the household tasks, or in the making of cheese and butter, or in taking care of the poultry. Two thirds of those engaged in farming are farm owners or renters, and thus may be said to be working for themselves.

General farming is learned by most people on the job. Farmers' sons or farm laborers learn how to perform the various farm tasks by doing them. As farms require more and more kinds of machinery for operation, and as competition becomes keener, the trained farmer is outdistancing the "rule-of-thumb" farmer. This makes training more and more desirable. The United States Government has been generous in providing means so that each State maintains a State Agricultural College, where training for scientific agriculture can be obtained. These schools also have Experiment Stations, in different parts of the States in which they are located, and also give "short courses" of a very practical nature, both in winter and summer sessions. Farm clubs of all kinds, which encourage farm children to raise pigs, chickens, vegetables, and other products, are conducted by the Extension Bureaus of the Agricultural Colleges. Such courses as agronomy, which deals with soils and field crops and the management of farm lands, and animal husbandry, which treats of the breeding, care, and handling of live stock, are given in every Agricultural College. There are also courses in farm mechanics, farm accounting, farm buildings, home economics, and many other special subjects of interest to the prospective farmer and stock-raiser, conducted by high schools under the Smith-Hughes Act.

Income. The income from agricultural vocations varies with the size of farm, nature of crop, cost of harvesting, current prices, and so forth. For the great staple crops of wheat, corn, rice, cotton, beef, and wool, world market prices prevail. This means that the American farmer is brought into competition with all the farmers in the world who raise similar crops. It is very difficult for general farmers to get together in marketing organizations, hence they suffer through having to carry their marketing burdens alone.

The general farmer is a capitalist. With the disappearance of free public land, and the development of industrial centers, land values have risen to such an extent that it is difficult to make the land yield a net profit which amounts to a fair interest on the value of the land. Public improvements in highways, schools, and other desirable social advantages make the life on the farm more pleasant than ever before, but these improvements also make taxes higher. This condition is resulting in the breaking up of large farms into smaller units which can be more intensively farmed, and which do not require such a large capital outlay as that involved in operating the farm of several hundred or several thousand acres.

There are several possible openings for the person trained in agriculture, but not possessed of extensive capital. One is in the government, state, or county agricultural service as specialists, as experiment station directors, as county agricultural agents, or as teachers in Smith-Hughes and other high-school courses in Agriculture. Another is that of renter. After receiving one's agricultural training, and after several years of experience as worker, foreman, manager, or agricultural specialist, it is often possible to rent a farm, either for a cash rental or a portion of the crop, and to begin to save for ultimate ownership of one's own farm.

SEEK-FURTHER QUESTIONS AND SUGGESTIONS

1. Take note of the food on your table for a single day, and see how many different agricultural workers contributed to the satisfaction of your hunger that day.
2. In like manner, enumerate the different kinds of agricultural vocations represented in the things you wear — shoes, hat, dress, or suit of clothes. Where did they probably come from?
3. Have you ever attended a real "round-up"? Do the skills exhibited at a "Rodeo," or a "Wild West" show, really represent the type of work which the cowboy does in following his regular vocation?
4. Some of the wheat taken from King "Tut's" Tomb in Egypt was sent to a farmer in Alberta, Canada. The third year he had a

crop of eighty-seven bushels from an acre. How was it possible for this wheat to retain its vitality for three thousand years or more?

5. The next time you have a chance to visit a farm, make it a point to observe how many different kinds of tasks the farmer has to perform. How does what the farmer has to do compare with working in a factory day after day?
6. Why is it necessary to have state inspection of dairy farms? What kinds of tests do inspectors of dairies make?
7. Will it ever happen that so many people go to work in factories and live in cities that there will not be a sufficient number of farmers to raise food for the population?
8. In what part of the country is the most wheat raised? The most corn? The greatest number of hogs? The greatest number of beef cattle? The greatest number of mules?
9. Where is cotton the most important crop? What State ships the greatest number of oranges? Is rice grown in this country?
10. Why is it hard for wheat farmers to get together in coöperative selling organizations?

SELECTED REFERENCES

1. Gowin, Wheatley, and Brewer: *Occupations*, 127–43.
2. Haskin, Frederick J.: "The Department of Agriculture"; in *The American Government*, 213–26.
3. Hill, Howard C.: *Vocational Civics*, 167–76.
4. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 3–32.
5. Platt, and Farnham: *The Book of Opportunities*, 13–16.
6. Rosengarten, Wm.: *Choosing Your Life-Work*, 89–94.
7. Sanford, A. H.: *The Story of Agriculture in the United States*.
8. Tappan, Eva M.: *The Farmer and His Friends*.
9. Stanford University Bulletin: *Vocational Information*, 18–22 (farming.)

CHAPTER V

AGRICULTURAL VOCATIONS INVOLVING GARDENING, FLORICULTURE, HORTICULTURE, FISHING, AND FORESTRY

1. *Nature of the work*

THE specialized types of farming to be discussed in this chapter are market-gardening, floriculture, and nurseries, horticulture, fishing, forestry, and lumbering.

Market-gardening. People who live in cities have very little surplus land on which to raise vegetables for their own use. A great many city dwellers, however, do cultivate a small kitchen garden in the back yard, and find that it is both excellent as a means of recreation and profitable in helping to keep down the grocery bill. The great bulk of the vegetables used for foods, however, are raised by truck-gardeners who specialize in that type of agriculture, or by general farmers in their garden plots.

Those who make a specialty of truck-gardening have the advantage of the general farmer who raises vegetables as a side line, because they usually secure very fertile bottom land near the cities. This level, rich land is highly cultivated, kept well fertilized, and so intensively farmed that two or three different kinds of crops per year are produced from the same soil. The truck-gardener also often maintains a selling booth at the roadside, where motorists can stop and secure fresh vegetables at reasonable prices. Then, too, many of the larger cities maintain public markets where a truck-gardener can secure a stall at small cost. Here he brings his products and sells them directly to the public. Thus he saves for himself the profits which usually go to the retailer or commission man.

In certain parts of the South, and in California, market-gardening is conducted on an extensive scale, and such vegetables as lettuce, cauliflower, green onions, radishes, and green

peas are shipped to Northern and Middle Western States during the winter in carload lots. In 1927, the carloads of green vegetables shipped from California exceeded the carloads of citrous fruits sent from that State. In some of the States having a long, cold winter it is found to be profitable to raise certain vegetables in hothouses. Prices are necessarily high, but it has been found possible to compete with the truck-gardeners who must ship long distances to reach the winter market, and depend on commission men to dispose of their products. Truck-gardening is one of the most difficult types of farming, as it requires constant attention, long hours, and great industry to insure success.

Floriculture. Whether it is possible to have a truck or a kitchen garden or not, it is almost always possible to have a small bed of flowers. There is a big demand for "cut-flowers" the year around. This demand has resulted in the development of the vocation of florist, or one who raises flowers as a business. The florist usually maintains a "greenhouse" where flowers of all varieties may be grown at all seasons. In cold climates the greenhouse is made of glass and heated artificially. In mild climates, frames covered with cheese-cloth or laths, set half an inch apart, protect the hardier varieties of plants and flowers from light frosts. The more delicate flowers are grown under glass.

Flowers grown from bulbs, such as crocuses, hyacinths, tulips, and daffodils, are very popular for home flower gardens and as cut-flowers for decorative purposes. The raising of the bulbs from which these flowers are grown has become a large industry, in certain parts of this country. Another branch of the vocation of floriculture is the raising of such flowers as roses, violets, hyacinths, and so forth to be sold to perfume manufacturers. The raising of great fields of flowers to be harvested for their seeds is another variety of floriculture that has attracted many persons.

The greenhouse man usually conducts a nursery also for the growing of ornamental trees and shrubs used in landscape

gardening. For this purpose he needs several acres of land, where he can plant many rows of plants and shrubs and "nurture" them until they are of a size which makes transplanting possible. In addition to flowering plants, flowering and ornamental shrubs, and bulbs of all kinds, the greenhouse and nursery owner grows the stock for all varieties of berries and small fruit, as well as every variety of fruit tree which may be grown profitably in his territory. Large nurseries usually have a landscape gardener to advise with patrons regarding the laying out and beautification of the home or institutional grounds.

Horticulture. *Small fruit.* Strawberries, blackberries, loganberries, raspberries, currants, and gooseberries are extensively used for all kinds of jellies, jams, and preserves, in addition to being served fresh or made into pies. Grapes are grown extensively for table use, for making into raisins, and for grape-juice and sacramental and medicinal wines. The adoption of the prohibition amendment was supposed to be a death blow to the grape industry, but it simply meant a change in the varieties grown. Vineyards are now devoted primarily to raisin and table varieties of grapes.

Persons who devote their energies to small-fruit raising usually confine their efforts to a few acres of land, because the work is very exacting during the fruit season. Where the product is to be sold for table use it is necessary to ship the same day that the fruit is picked, and to have specially designed refrigerator cars for the purpose. This fruit is highly perishable, and if not disposed of soon after it leaves the refrigerator cars it becomes a total loss. There is great risk involved, and many disputes arise between growers and commission men over losses due to condition of fruit on arrival at market.

The best situation for the small fruit-grower is to have a cannery near at hand which will take all of his product, even at a lower price than it would bring if shipped. He is saved much worry and the possibility of total loss. There is such a demand, however, for strawberries and raspberries for table

use that great ingenuity is employed, by marketing agencies, to bring the fruit in good condition to the table of the consumer. Where the growers are organized into an association for marketing their own berries, the profits are greater and the customer is likely to be better satisfied.

Melons. The growing of small fruits frequently is combined with the growing of watermelons, muskmelons, casabas, honeydews, and so on. Melons grow well in a hot, dry climate, and are raised to best advantage in sections where irrigation is practiced. Sunny slopes make the best melon patches, and immense numbers may be grown on small areas if they are well tended and cultivated. Melons are not as perishable as are other types of fruit, and hence there is not so much risk in shipping them to distant markets. They can be picked just before they ripen, and allowed to complete the ripening process on the way to market. Whole trainloads of melons are shipped annually to city markets from sections of Florida, Texas, Colorado, and California.

Tree-fruit. Apples, pears, plums, peaches, and cherries are grown in practically every part of the United States. There are some 140,000,000 apple trees, 90,000,000 peach trees, 40,000,000 prune and plum trees, and 25,000,000 pear trees now growing in our country. On these trees were grown, during 1924, some 250,000,000 bushels of fruit. Nearly every farm has its family orchard, but the bulk of commercial fruit is grown in orchards devoted to one variety. Most of the 40,000,000 orange, lemon, and grapefruit trees are found in California and Florida. Likewise the fig and date-palm, and olive trees, are for the most part confined to these two States.

The task of developing a bearing orchard of fruit trees is both difficult and expensive. Suitable land, with proper soil, climate, drainage, and location with reference to markets, must first be secured and cultivated. The small trees, usually one or two years old, must be set out in regular rows, and then taken care of until they come into bearing. This requires three, four, and sometimes five years, depending upon the variety of tree.

This is what is sometimes called "the rat-hole" stage of fruit-raising, because all the money is going out and none is coming in. It requires either considerable capital, or a large enough farm so that yearly crops sufficient to provide a living may be grown on the part not being developed for orchard purposes.

APRICOT ORCHARD, SHOWING METHOD OF SUN-CURING THE FRUIT

Fruit-raising is considered one of the most enjoyable types of agricultural vocation. The orchards are relatively small, ranging from five or ten to thirty or forty acres, to the single owner. This means that there can be considerable community life, and with conditions approaching those in the best rural villages. Where certain entire regions are devoted to the raising of a single variety of fruit, such as apples, oranges, cherries, or prunes, the orchardists can develop coöperative selling organizations, secure expert horticultural advisers, and unite in advertising their products so that they come to be widely known and called for by their trade names.

Owing to the long period of unproductive development, the expense of planting and cultivating trees in the growing stage, and the necessity of fighting every variety of fruit-tree pest, success in horticulture requires a considerable amount of capital. It also requires scientific skill, patience, and eternal watchfulness. Not only are there devastating blights and pests, but early and late frosts, too much rain or too little, and sleet storms and heavy winds to contend with. If the fruit is highly perishable, as in the case of peaches, there is the problem of speedy marketing or great loss. These numerous uncertainties make it highly desirable for the person who is thinking of becoming a fruit-raiser to investigate the matter carefully before staking all, or even a considerable portion, of his capital on a "fruit ranch."

Forestry. Forestry is classified with agriculture as a vocation, because it deals with the growing and cultivation of trees of all kinds. There was a time in our Nation's history when our only thought, in regard to the forests, was how to get rid of them in order to have the land for the growing of crops. After the forests of the Eastern States had been nearly exhausted, and those of the Middle West and Far West were beginning to disappear, we began to realize that a great national resource would soon be destroyed. It was at this time that the science of forestry, practiced for centuries with great skill in European countries, was made a part of the curriculum in some of our American universities. Through the influence of some of the early graduates of these schools of forestry, the Congress of the United States was persuaded to set aside certain great areas as national forest reserves. The National Forestry Service, under a Chief Forester, was established, and has been making a study of the best methods of forest conservation and development since that time.

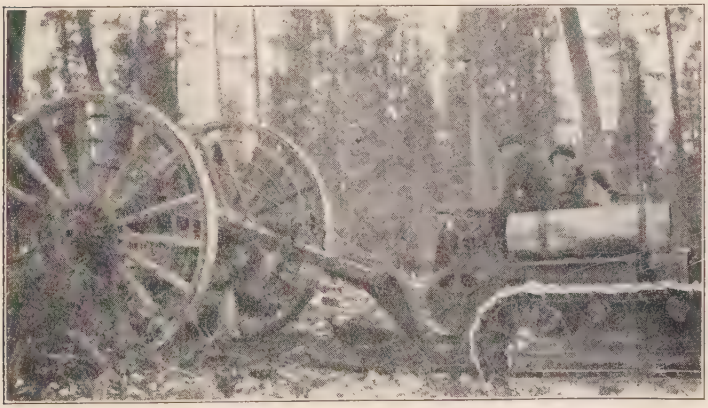
The duties of the forester and forest ranger are both of a technical and practical nature. He must know about the growth, nurture, and development of trees. He must be able to supervise the replanting or reforestration of burned-over

or logged-off areas. He must also know when timber is "ripe" for cutting, and how to supervise the cutting so as not to injure the growing crop of trees. Likewise he must make topographical maps, plan forest trails, and understand the best methods of fighting forest fires.

In addition to the National Forestry Service there are many lumber companies, and large landed estates as well, which employ foresters to conserve and protect their trees, advise with regard to cutting and conservation, and attend to matters of "tree-surgery" or the problem of dealing with tree pests of all kinds.

The forester needs to be a person of strong physique, who loves the out-of-doors, is capable of undergoing hardship, is resourceful in meeting emergencies. In addition to these qualifications he must have the scientific attitude of mind, and be capable of making careful observations and recording significant data for the reports that must be made to the central bureau in Washington, D.C.

Lumbering. Lumbering has the same relation to forestry that harvesting has to wheat growing. It consists of cutting



LOGGING WITH BIG WHEELS AND TRACTORS

It used to take several yoke of oxen to drag one log along a skid road. Now it is done much more efficiently by the method shown above

and preparing the trees to be shipped to the sawmills, where the lumber is made ready for the building of houses, the making of furniture, and the thousand and one other uses to which lumber is put. Except for the timber included in the great National Forest Reserves, most of the merchantable timber of the country is now owned by great mill companies, which carry on logging operations on a gigantic scale. Instead of the skid

THE TITANIC LOADER AND BUNCHER

This picture shows how the logs which are dragged to the logging railway track are loaded on to the flat cars for transportation to the mill

roads, ox-teams, and snow-sleds of the Maine and Michigan woods of twenty-five years ago, we now have logging railroads, donkey engines, and great steam cranes for loading the logs upon the car trucks. For cutting the tree into sections after it has been felled a steam-propelled crosscut saw is provided. Instead of waiting for spring freshets to bring the logs to market, they are hauled from the woods daily and taken by rail direct to the sawmills.

The improved mechanical efficiency now employed in lumbering operations means that our timber resources are being consumed much faster than trees can grow to replace those cut down and made into lumber. Hence the science of forestry must be encouraged, or in a few years we shall have no timber for the lumberjack to cut. Unless this precaution is taken, lumbering as a vocation will disappear along with the destruction of the forests.

Fisheries. Fishing also is classed as an agricultural vocation, because the propagation of fish in hatcheries is similar to the growing of millions of plants in nurseries, and the catching of the fish is similar to harvesting other crops.

Fishing is of two main types. One type is fishing as a sport, where one uses rod and line in fly-casting, or various devices in trolling for game fish. The State and National Governments maintain fish hatcheries on convenient streams to propagate "fry" or young fish to stock the lakes and streams, so that the supply of game fish will not become exhausted. A total of 5,000,000,000 fry were produced in hatcheries in 1925. The other main type is commercial fishing, carried on mostly along the Atlantic and Pacific coasts, the Gulf of Mexico, and the Great Lakes. This type of fishing is done in power boats, with seines, nets, fish wheels, and traps of various kinds. When salmon are running in Alaska or on Puget Sound it is not unusual for fishermen to make a haul of a ton of salmon in one great net. The fresh fish are packed in ice and sent to the markets, and thousands of pounds are either salted down, dried, or canned. The total value of the commercial fisheries of the United States, in 1925, was $120,000,000, of which $95,000,000 represented canned or preserved fish.

Fishing as a business is not much of a sport. It represents hard work in wet clothes, during all sorts of weather, and for long and unusual hours. It has its fascinations, however, for those who have been brought up to it. It is a life of adventure, as well as hardship, and the chance of making a "big catch" when the season is on lends zest and interest to the work.

On the Atlantic Coast the chief kinds of commercial fish are cod, mackerel, bluefish, swordfish, sturgeon, halibut, salmon, and the sardine. On the Pacific Coast all of the above varieties are found, and in addition the tuna fish is caught in large quantities. In the region of the Great Lakes pike and pickerel are the commercial fish. Many thousand tons of non-edible fish also are caught and made into fertilizer for the farmers.

Shellfish. The propagation and marketing of all kinds of shellfish, such as oysters, clams, lobsters, and crabs constitute another large branch of the fishing industry.

Other types of fishing. Whales and seals, although belonging to the family of mammals, furnish still another type of fishing. Whales are sought for the oil and whalebone which they yield, and seals on account of the demand for sealskin coats. In 1925, there were 725,000 seals in the Alaska seal herd, and 20,000 were taken for their skins. Whaling has always been counted an adventurous and romantic vocation, especially for those who do the hunting and harpooning. Those who look after the cutting-up and trying-out processes, however, do not consider it so romantic.

2. *Opportunities, training, and income*

Numbers engaged. The numbers working in the vocations which we have been discussing in this chapter, as shown by the United States Census of 1920, are given in the table on page 73. It is evident that the proportion of women engaged in the vocations shown in the table is not very great. Only about one in sixteen gardeners, one in twelve florists, one in eighteen orchardists, one in one hundred and fifty fishermen, and only one in seven hundred and twenty-five foresters and lumbermen is a woman. The number of women taking up floriculture, horticulture, and market-gardening increased by about twenty per cent between 1910 and 1920, a fact which indicates that these are the special agricultural vocations most likely to be chosen by women who are interested in out-of-doors work.

Vocations	Men		Women		Total	Grand Total
Truck-gardeners .	93,523		5,068		98,591	
Landscape-gardeners	4,377		25		4,402	
Gardener, foremen	1,698		176		1,874	
Garden laborers	75,234	174,832	6,298	11,567	81,532	186,399
Florists and nurserymen	10,008		996		11,004	
Greenhouse laborers	15,075	25,083	1,164	2,160	16,239	27,243
Fruit-growers	52,208		3,194		55,402	
Foremen, orchard and nursery	3,896		163		4,059	
Orchard, nursery laborers	37,044	93,148	1,954	5,311	38,998	98,459
Fishermen and oystermen	52,457	52,457	379	379	52,836	52,836
Foresters, rangers, and timber cruisers	3,651		2		3,653	
Owners, and managers of lumber camps	8,397		13		8,410	
Foremen, overseers, and inspectors	8,434		..		8,434	
Teamsters and haulers	17,106		..		17,106	
Lumbermen, etc.	179,496	217,084	279	294	179,775	217,378
Totals		562,604		19,711		582,315

Necessary training. Preparation or the scientific aspects of *market-gardening*, *floriculture*, and *horticulture* is best made in a school of vocational agriculture, such as the Smith-Hughes department of a good high school, or the State Agricultural College of your State. The United States Department of Agriculture employs a large number of experts in these lines. Special attention is given by the Government to a study of pests, scales, blights, and other enemies of fruit trees, shade trees, and forest trees of all varieties. Courses in botany, zoölogy, entomology, and chemistry, which form a necessary

background for advanced training in these lines, can be elected in the larger high schools and junior colleges. The rapid development of market-gardening and fruit-growing is demanding not only a greatly increased number of workers, but a wider field for the trained agriculturist has been created as well.

Training for the vocation of *fisherman* is primarily by the apprenticeship method, but there are many hundreds of *other employees* in state and national fish hatcheries, and an additional number find employment as state game and fish wardens. There are several important marine biological laboratories, such as that at Wood's Hole, Massachusetts, the Hopkins Marine Biological Station at Pacific Grove, California, and the Puget Sound Marine Biological Station at Friday Harbor, Washington, where training for expert positions under the Government and with private corporations may be obtained.

Those interested in becoming *scientific foresters* may secure training at the Yale School of Forestry, or the School of Forestry of the University of Washington, as well as through forestry courses offered in many of the State Agricultural Colleges. Forest rangers are usually trained by working with the foresters in charge of the State and National Forest Reserves.

Training for most of the positions in connection with *lumbering* is by the apprenticeship method, or learning by doing. Boys who live near forest areas where logging operations are being carried on find opportunities to go into the woods for a few months at a time and to discover whether they have aptitude for that type of work. The operations which are highly skilled call for good wages, but most of the men are employed at tasks which can be mastered in a few weeks or months at best. Probably not many junior or senior high-school boys would select the life of the lumberjack as a vocation, but for the sturdy youth, interested in a season of healthy hard work, the logging camp affords a very worth-while opening.

Managers and *owners* of logging camps need to have busi-

ness training, and the owners must also have considerable capital to carry on the work. Competition is keen, freight rates are high, and there is a rather persistent tendency to overproduction, owing to the machine methods and the gigantic scale on which logging operations are conducted. Ability to handle men, resourcefulness in overcoming obstacles, and a strong element of "drive" in one's make-up are among the necessary qualifications for successful lumbering operations.

Income. The income to be derived from market-gardening, floriculture, and horticulture is difficult to estimate. Land values are usually high, and the cost of production also is high. These factors make it necessary to earn the equivalent of fair wages for the time devoted to the raising of the crop, and also a fair interest on the capital invested in the land. When there is a good crop and fair prices prevail the returns usually exceed interest and wages, but in off years, the farmer barely makes a living, and may even have to draw on his savings. Taken year in and year out, however, the industrious gardener, fruit-farmer, or gardener and nurseryman makes a better living than the average worker in other lines of work, in addition to having an out-of-doors life and being independent.

The fisherman also has a rather uncertain income because the season is usually short, and he must make enough in the open season to carry him through the year, or supplement his fishing with other lines of work. Foresters generally are under civil service either with the State or National Government, and receive from $150 to $300 per month, except for directors and higher officials. Lumbermen receive from $4 to $6 per day, while foremen and managers receive from $250 to $400 per month, and mechanics are paid the current wages for their various crafts.

Attractive features. Aside from the money returns, which depend so largely on soil, location, climate, and the knowledge and resourcefulness of the farmer, there are many attractive features about these special agricultural vocations. They

require a smaller amount of capital than does farming on a large scale. They permit community organization and coöperation. The surroundings are generally favorable for the bringing up of children. The work, although exacting, is not heavy. Scope is given for the highest type of trained skill in combating adverse conditions, and the farmer is encouraged to improve his methods by attending extension courses given by the College of Agriculture. Thus he is enabled to profit by his mistakes, and to keep himself informed and in touch with the latest developments in his line.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. When motoring in the country, near a city, stop and visit the farm of a market-gardener. You will be amazed at the amount of "truck" which he raises on a few acres of ground. See if you can find out how he does it.
2. When you visit a florist's shop and find out how much he asks for a dozen roses, you will think that he must make a great deal of money. When you discover how many poor roses he has to throw away to get that perfect dozen, and also how much rent and other expenses there are connected with greenhouses and florists' shops, you may change your mind as to the profits.
3. Estimate the cost of buying ten acres of land, planting it to apple or other fruit trees which do well in that region, and taking care of it until the fruit trees come into bearing. Do not overlook cost of planting and cultivating while trees are growing.
4. Is it a good plan to raise tomatoes, strawberries, or other small fruit between the rows of growing trees in a newly planted orchard, while waiting for the trees to come into bearing?
5. What are the advantages and disadvantages of coöperative selling or buying organizations, such as the Apple Growers, the Raisin Growers, the Orange Growers, or the Prune Growers Associations?
6. What would you have to do to get an opportunity to spend a summer vacation in the Forest Service as an assistant ranger?
7. Find out, if you can, under what conditions the Government permits lumber companies to cut timber in a Forest Reserve.
8. Where is whaling now carried on most extensively? What methods are now employed in the whaling business?

9. Look up the part that was played by Gifford Pinchot and President Roosevelt in setting aside our National Forest Reserves.
10. How does a cannery help the fruit-growers in a given section, even though it pays lower than market prices for fruit?
11. How are swordfish, tuna, and sturgeon caught?
12. What is done with land from which the trees have been cut down and sawed up into lumber?
13. Is lumbering a permanent industry?

SELECTED REFERENCES

1. Albright, H. M., and Taylor, F. J.: *O Ranger.*
2. United States Department of Agriculture: Bulletins on *Floriculture, Horticulture, Forestry, Fisheries,* and *Market Gardening.*
3. Burbank, Luther, and Hall, Wilbur: *The Harvest of the Years.*
4. Burleigh, C. B.: *All Among the Loggers.*
5. Cook, John A.: *Pursuing the Whale.*
6. Gabriel, R. H.: "Toilers of Land and Sea"; in vol. III, *The Pageant of America.*
7. Hirth, Emma P., editor: *Training for the Professions and Allied Vocations,* 33–42 (farming).
8. Pinchot, Gifford: *The Training of a Forester.*
9. Platt and Farnham: *The Book of Opportunities,* 21–24 (horticulture); 34–36 (forestry); 3–6 (fisheries); 7–8 (trapping); 9–12 (logging).
10. Rolt-Wheeler, Francis W.: *A Boy with the United States Foresters.*
11. Tappan, Eva M.: "Luther Burbank, Plant Breeder"; in *Heroes of Progress.*
12. Stanford University Bulletin: *Vocational Information,* 23–26 (horticulture and forestry).

CHAPTER VI

STEAM AND ELECTRIC RAILWAY TRANSPORTATION

1. *Nature of the work*

Six main branches. Transportation may be said to be the tie that binds all other vocations together. Where transportation facilities are poor or very primitive there is very little business transacted. The better the means of transportation the easier it is for people to move about and for goods to be shipped from one place to another. Transportation is one of the great civilizing agencies, and where people are adequately supplied with quick and easy means of getting about, and with ample means of conveying their commodities from farm and mill and shop to the consumers, they are also highly civilized and progressive.

There are six main branches of the great business of transportation: these branches are steam railroads, street railroads, highway or automotive transportation, water transportation, air transportation, and communications by telephone, telegraph, and radio. A common characteristic of the first five of these modes of transportation is that they involve a high degree of responsibility for the safety of the lives and property of others. "Is it safe?" is the first question which the public asks in connection with a passenger transportation agency; and "Is it responsible?" is the second question.

The safety-first campaigns that have been carried on extensively in the past few years have been mainly for the purpose of educating the public in regard to conduct in relation to transportation agencies. How to get on and off street cars and other vehicles, and precautions to take at crossings and street intersections, are types of the instruction aimed at. The transportation companies themselves have spent much time and money in training their employees to exercise great caution in the protection of the lives of their passengers.

"THE OLYMPIAN" AT McCLELLAN'S BUTTE

Famous transcontinental, electrified train of the Chicago, Milwaukee & St. Paul Railway

Transportation vocations are usually rather hazardous, especially for those directly in charge of the moving trains, busses, boats, or airplanes. Strength, agility, full control of one's mental and physical powers, physical courage, steadiness in emergencies, and sobriety are among the qualifications demanded of employees of transportation companies who handle the throttle of an engine, the control of a street car, the wheel of an auto-bus, or the control sticks of an airplane.

Nearly every variety of vocation which is treated in this book may be found associated with some phase of transportation, but only those vocations will be discussed in this chapter which involve purely transportation features.

Steam railroad transportation. In all the countries of the world combined, it is estimated that there are about 750,000 miles of railroad. The United States has 250,000 miles, or

one third of the world's total mileage. In 1925, the railroads of the United States carried 1,000,000,000 passengers and 3,000,000,000 tons of freight, employed 1,750,000 persons, and paid nearly $3,000,000,000 in wages. The organization and administration of the railroads is a gigantic task. The operation of the railroads calls for persons of every type of ability from the humble flagman at the crossing to the president of a system that operates main lines and branch lines spreading over many States. Not all of these different types of service can be described. Only the main subdivisions will be touched on briefly here to give a general idea of the field of railway transportation as a possible field of vocational interest.

Train operation. The railway employees who have charge of train operation are engineers, firemen, brakemen, baggagemen, porters, switchmen, and conductors. There are three classes of engineers, firemen, brakemen, and conductors, that is, those working in the railway yards, those on freight trains, and those on passenger trains. All of these men must pass severe examinations, have their eyes tested for color blindness or other defects, and their ears tested for keenness to various sounds and signals. It is also necessary to pass exacting tests regarding rules of the road, regulations, signals, schedules, and road conditions.

The engineer. The engineer has the most exacting position on the train. He drives the engine, and must follow directions given by the train dispatcher. He must know his engine, both as to its mechanical parts and its peculiarities. He must see that all parts are in good running condition and properly oiled. He must be quick to act in emergencies, closing the throttle, putting on the air brakes, or reversing the engine, as the case requires.

The fireman. The fireman has to keep up steam. He must either shovel coal or attend to the oil supply in such a way that the steam pressure in the boilers will be constant, and adequate to the engine's needs. It is his duty also to watch the water level in the boiler. He sits on the opposite side of the cab from

the engineer and, when not engaged in his duties connected with fuel and water supply, keeps watch of the track ahead.

The brakeman. On a passenger train the brakeman calls stations, tends to the lighting and heating of the cars, and helps people on and off the trains. When the train stops, the

"THE CAPITAL LIMITED" OF THE BALTIMORE AND OHIO RAILWAY, SPEEDING THROUGH THE POTOMAC RIVER VALLEY

Note the old-time canal, with canal-boat being towed by mule on the tow-path.

rear brakeman goes back with a flag to warn other trains that might be approaching. The brakeman on a freight train has much more strenuous duties. He sets switches, couples and uncouples the train when cars are picked up or set out at a station, makes and tests airbrake connections, watches the train for hot boxes, and transmits signals from the conductor to the engineer. His work is both difficult and dangerous.

The conductor. On a passenger train the conductor corresponds to the captain of a ship. He has general charge of the train, receives orders regarding stops, collects tickets and cash fares, looks after the welfare of passengers, and sees that they get off at the right stations. He must have an accurate knowledge of train schedules, cross-over and intersection points, and how to make out the various kinds of reports required.

The freight conductor. The freight conductor directs the setting out and picking up of cars. He receives all orders regarding the movement of the train, and he carries all way-bills for the freight on his train. Although it is not as dangerous a job as that of freight-train brakeman, the freight conductor has a rough sort of job, and he needs a sturdy body and a resourceful mind.

The baggageman. The baggageman has charge of the baggage car. He requires bodily strength, since he has to handle all sorts of heavy baggage. He must know well the stops and transfer points, and must have some skill in clerical work, because he has to keep records and make out reports.

Office and clerical positions peculiar to railroading. In the general offices of a railroad the clerical vocations are quite similar to those connected with any large business enterprise. In the depots where trains arrive and depart, however, there are telegraphers, train dispatchers, station agents, ticket sellers, freight and passenger agents, and station masters.

Telegraphers and train dispatchers. Every station has its telephone and telegraph operator who keeps in touch with the train dispatcher, writes out messages, and sees that the train conductors receive the necessary orders regarding the movement of their trains. This is very responsible work, since mistakes frequently result in great loss of life or the destruction of property, or both. Telegraphers need not only to know thoroughly the Morse telegraphic code, and to have skill in sending and receiving messages, but they must know the rules and regulations of the road, and be familiar with the signaling systems and devices.

The train dispatcher. The train dispatcher not only needs to be an expert telegraph operator, but he must have an absolutely correct knowledge of all sidings, switches, way stations, and telegraph offices along the line. He must be able to calculate the traveling rates of trains, making proper allowance for grades, track conditions, type of engine used, and load hauled. He must keep himself informed as to the movement of all trains under his jurisdiction, and must know just where and how to get in touch with any given train. The position of train dispatcher is one of heavy responsibility, and requires clear thinking, power for quick decision, and speedy action. The line of promotion is from expert telegraph operator to divisional dispatcher, and up to chief dispatcher in charge of all trains in a given railway system.

The station agent. The station agent in a small village or way station performs the duties of the telegraph operator, the baggage custodian, the ticket seller, and the freight agent, hands messages to the trainmen and sets signals. He must know passenger and freight rates, and be able to deal courteously and efficiently with the public. He handles considerable money, and must therefore be able to keep books and make out accurate reports. The station agent in a city does very few of these things himself, but he must be able to administer and direct a large group of employees who perform these tasks. He is essentially a business man with a high degree of specialization in the field of railroad management.

Other positions. In and around railroad depots and stations there are such positions as sellers of tickets and sleeping car accommodations, freight clerks, head baggageman and assistants, station masters, yardmasters, and train callers. In the general or divisional offices are found the experts in the traffic department who make rates, arrange schedules, secure business, and keep track of costs and income, both of the freight and the passenger business. The claim department handles all manner of claims made against the railroad on account of accidents to persons or goods, and the purchasing

department takes care of the buying of necessary materials for the use of the various departments.

The shop vocations, peculiar to railroads. The shopworkers include machinists, boiler-makers, blacksmiths, carpenters, painters, upholsterers, airbrake men, car inspectors, car repairmen, general foremen, and gang foremen. All of these vocations require special knowledge of railroad conditions and equipment. The highest position in the shop department is that of master mechanic. He has charge of the machine shop and all the employees therein. He usually works directly under the division superintendent. Of about equal rank with the master mechanic is the superintendent of the car department, or master carpenter. If all cars are made of steel, as is frequently the case at present, the master mechanic has charge of all car construction and all machine and repair work.

In addition to the men who work in the shops, there are a number of skilled mechanics who must travel over the road and keep the mechanical or electrical equipment in working order. Among these men are the signal and interlocking experts, and the signal inspectors. It is necessary for them to have both mechanical and electrical training and skill.

Maintenance of way, or track-work vocations. The safety of trains and passengers is dependent, to a very great extent, upon the care and skill exercised by the workers in this division. Loose spikes, broken rails, washouts, or landslides must be detected, and approaching trains warned. Bridges must be kept in repair, telegraph and telephone lines kept in service, and the right of way must be kept in first-class condition. The vocations represented in this division are bridge carpenters, fence repairers, linemen, concretemen, structural iron workers, and trackmen. Each group has a foreman, whose responsibility it is to see that the work is efficiently done. Except for the foreman, the trackmen are generally unskilled, and represent the lowest round of the railroad vocations ladder. Even these men have a responsible part to fill. Well-tamped ties, carefully made joints and connections, and a well-

kept right of way add not only to the safety, but to the comfort as well of the traveling public.

Absolute precision is demanded of every man engaged in railroad work. There is no place for carelessness or blunders. No alibis or excuses are tolerated. The discipline is severe, and only those survive who have the stamina, the interest, and the ability to rise to emergencies. Men who are perfectly fit for other vocations are frequently rejected by the personnel department of the railroad because of some slight defect of eye or ear which might mean death to the worker, or to those for whom the railroad is responsible. Only the physically and mentally fit need apply.

Electric urban and interurban transportation. With the coming of the automobile and the auto-bus it was thought that street and interurban railways would disappear. This did happen in the case of a number of small cities, but there is no instance on record of a city of over 50,000 inhabitants abandoning its street railways. Steam railways have nearly six times as many miles of track as have the street railways, but in 1925 the street railways carried fourteen times as many passengers as did the steam railways. Steam railways carried an average of 4000 passengers per mile of track, while the street railways carried 311,000 passengers per mile of track, during 1925. This does not look as though the street railways were going out of business very soon.

The reason for the fact that 45,000 miles of street railway tracks carry 14,000,000,000 passengers per year is found in the need of workers and shoppers to get from their homes to the stores, shops, and places of employment, and back again every day. Where the steam railway carries a person only a few times per year, the street railway carries him twice nearly every day in the year. This means that the responsibility of the street railway for the safety of its passengers is very great, and also that its opportunity for service is almost unlimited. It makes possible the building of homes in suburban areas, where there is plenty of room and fresh

air, and so promotes health and social well-being in a very definite way.

The motorman. As previously stated, all of the positions on the street railways involve a considerable amount of responsibility, but the position of motorman is one of those involving greatest responsibility. The work itself is comparatively light, but requires constant attention. In crowded traffic conditions, where automobiles, pedestrians, trucks, and busses abound, the motorman must be alert and skilled in controlling his car. Smooth operation in starting and stopping not only adds to the comfort of the passengers, but saves wear and tear on the car and its equipment. Closed vestibules are provided for stormy weather, and stools may be used where traffic conditions permit. Working hours are likely to be irregular, with rush hours morning and evening when people are going to or returning from their work.

The conductor. The physical demands upon the conductor are not as great as upon the motorman. He gives the signals for starting and stopping, helps passengers on and off the cars, collects fares, and issues transfers. He needs to know, and usually calls, the cross-streets and important stops. He must be able to give information regarding the locations and the best routes to important institutions, parks, and other places of interest to strangers. Courtesy and honesty are the most necessary qualifications of the conductor on street railways.

Other street-railway vocations. In electric street-railway operations, there are various other vocations. The skilled workers include machinists, electrical workers, armature winders, carpenters, car repairers, linemen, and inspectors. With the exception of the inspectors, the work of the men in these vocations is almost the same as for the same types of service on the steam railroads. Since the cars handled are smaller, the work of making, handling, and repairing them is somewhat lighter than corresponding work on cars for steam railways. The street-railway workers are not so well organized as the steam-railway employees, hence their hours are more

irregular and the conditions under which they labor are not so well regulated.

2. *Opportunities, training required, and income*

Steam railways. The following statement shows the numbers of men and women engaged in steam-railway transportation, according to the 1920 census:

Vocations	Male	Female	Both
Baggage and freight agents	16,789	30	16,819
Brakemen	114,107	...	114,107
Boiler washers, oilers, etc	25,271	34	25,305
Conductors	74,359	...	74,359
Foremen and overseers	72,980	66	73,046
Inspectors	42,675	46	42,721
Laborers (unskilled)	463,613	6,586	470,199
Laborers (semi-skilled)	27,916	705	28,621
Motormen	3,560	...	3,560
Locomotive engineers	109,899	...	109,899
Locomotive firemen	91,345	...	91,345
Switchmen, flagmen	108,504	561	109,065
Superintendents and officials	32,385	41	32,426
Station, ticket agents	24,324	2,261	26,585
Totals	1,207,727	10,330	1,218,057

Steam railway transportation is not a type of work in which women engage, to any great extent, since only about ten thousand of them are found in all the vocations enumerated above. Something over 70 per cent of this number are listed as unskilled or semi-skilled workers, which means that they are probably employed in the cleaning and repairing departments of the railway depots and shops. It is rather surprising to find 561 women listed as switchmen and flagmen. The most attractive positions held by women are those connected with station-agent duties and ticket selling.

Training. For railway vocations, training is largely a matter of apprenticeship. It would be very difficult for any public agency to provide the means of training men for railroad work, since engines, tracks, round-houses, stations, telegraph

RAILWAY FREIGHT YARDS, FREIGHT SHEDS, INDUSTRIAL SECTION, AND HARBOR WITH DOCKS AND SHIPPING, SEATTLE, WASHINGTON

lines, and so forth, would have to be a part of the school's equipment. It is more economical and more effective to have railroad men trained by the actual work, therefore, than to try to provide such training by other agencies. To become a locomotive engineer a person usually comes up through the grades of oiler, hostler, wiper, or round-house helper to apprentice fireman, then fireman, then to engineer on freight trains, and finally to engineer on passenger trains. After becoming an engineer on a passenger run, promotion to the better runs is usually made by seniority, plus record for steadiness and physical fitness. The line of promotion for conductors is from some yard or track position, such as yard foreman or switchman, to brakeman on freight trains, and then to conductor on freight trains. Transfer to passenger service often means starting in again at a brakeman's position, and working up to the position

of conductor. Station agents often start as telegraph operators, or baggagemen, or in some clerical position where they learn the paper work, and then are put in charge of a small station, later being transferred to larger stations. The higher officials are usually promoted from the office and business administration end. Many great railroad executives, however, have come up through the traffic division.

Income. In the steam railway vocations, wages of from $2.50 to $3.99 per day are earned by messengers, crossing flagmen, section laborers, common laborers, car cleaners, janitors, watchmen, and clerks with less than two years' experience. Wages averaging from $4.00 to $5.99 per day are earned by baggage agents, clerks with more than two years' experience, gang foremen, passenger and freight firemen, and yard firemen, hostlers, carmen, telegraphers, station agents (small stations), flagmen, brakemen, baggagemen, and switchtenders. Those who receive from $6 to $8 per day are bridge foremen, passenger and freight engineers, passenger and freight conductors, yard foremen and engineers, and train directors. Those receiving over $8 per day are yardmaster, train dispatcher, depot master, and station agents in large depots, and various higher officials.

Some of the disadvantages of steam railway transportation vocations, especially those having to do with the moving of trains, are: they are very hazardous; it is difficult to secure insurance in the older insurance companies, and one is away from home a great deal. To offset the insurance handicap many railroads have their own systems of disability insurance and retiring allowances; tenure is fairly secure; and promotions, although rather slow in coming, are fairly certain to come as a reward of long and faithful service. Safety devices and safety-first campaigns among railway employees have resulted in improving the railway man's life-and-limb risks. Railway employees are highly organized, and have been able to secure for themselves very favorable wages and working conditions.

Electric street railways. The numbers engaged in the operation of electric railways are as follows:

Vocations	Male	Female	Both
Conductors	63,507	253	63,760
Motormen	62,939	20	62,959
Foremen	6,236	12	6,248
Superintendents and officials	3,445	10	3,455
Switchmen and flagmen	2,496	4	2,500
Inspectors	3,445	6	3,451
Semi-skilled laborers	9,088	171	9,259
Common laborers	25,046	468	25,514
Totals	176,202	944	177,146

Training. As the names of the different street-railway vocations would indicate, their duties are somewhat similar to those of the steam railway groups of the same designation. The main difference is that the control mechanism of a street car is much simpler than that of a locomotive, hence it takes much less time to learn the work. After two or three days in charge of a teacher-conductor or motorman, these vocations can be learned by persons who have the necessary qualifications of good sight, hearing, and general physical fitness. Other vocations in this field also, except office and administrative positions, are learned by apprenticeship or "trial-on-the-job" method. Elementary-school education is all that is necessary in the way of schooling, for most of the positions in the street-railway field, so far as operation of cars, maintenance of way, and so forth, are concerned. When it comes to the inspection, repair, and up-keep of the electrical-motor machinery, skilled men, trained in technical schools, are in demand.

Income. Street-railway motormen and conductors, who constitute the most numerous group of employees, receive from sixty to eighty cents an hour, and work eight to ten hours a day. The idea is being tried out in Philadelphia of having the pay of the street-car men vary up or down according to the rise and fall of the purchasing power of the dollar. Electrical workers in the employ of street-railway companies receive the standard wages of their respective crafts.

Working conditions. In some ways working conditions on street railways are more favorable than on the steam railroads, because the street-railway employee can live at home, and the hazards of the work are not so great. Traffic conditions are very trying at the rush periods of the day, and the work is generally more fatiguing than is the case with most of the train-moving operations on the steam railroads. There is a greater labor turn-over also. Street railways do not as often have retiring allowances, hospital service, and other attractive features as do the steam railways.

Fewer women, in proportion to total numbers engaged, are found in the electric-railway vocations. Two hundred and fifty women are found acting as street-car conductors. This type of service was started during the World War, and a number of women took it up permanently. The only other fields where over one hundred women are found are in the semi-skilled and common-laborer groups, probably as car cleaners, janitors, and matrons. The women employed in the offices of the steam and street railways are classified with the business and clerical vocations.

SEEK FURTHER QUESTIONS AND SUGGESTIONS

1. The Baltimore and Ohio Railroad Company recently celebrated the one-hundredth anniversary of the issuance of its charter. This charter was granted in April, 1827. By May, 1830, sixteen miles of road had been built, and trains of cars with flanged wheels were drawn by horses.
2. The Baltimore and Ohio's celebration consisted of "The Fair of the Iron Horse," at which were exhibited every sort of railway engine from the "Tom Thumb," invented by Peter Cooper, to the "President Washington," one of the great engines which draws the "Capital Limited," and which represents the last word in modern passenger-engine construction.
3. Among the pageants staged at this "Fair of the Iron Horse" was one in which Blackfoot Indians demonstrated the dog and horse "travois," consisting of two long poles lashed together over the horse's neck, with the other ends dragging on the ground to the rear. Crosspieces formed a platform on which they carried their loads.

4. Other methods of transportation used by American pioneers were shown. There was the saddle-horse with his saddle-bags, the ox-teams and carts, the covered wagon, the overland stage, and the pony-express. From the ox-cart to the "Capital Limited" made a graphic demonstration of a century's progress.
5. How do you account for the fact that nearly every boy, at some stage between five and ten years of age, wants to be either a policeman, or a street-car conductor?
6. Try to meet a railroad engineer, when he is off duty, and find out from him just what his duties, dangers, and responsibilities are.
7. The writer was going to the city recently on a fast train. All of a sudden the train stopped with a jerk that nearly threw passengers out of their seats. Looking out of the window we saw an automobile, partly turned around and with its left front wheel and fender torn off. It had been hit by a car step. There was a clear view for half a mile either way. Whose fault was it? How would you have liked to be the engineer on that train?
8. Maybe you would like to be a street-car motorman. The next time you ride on a street car, stand on the front platform with the motorman, if you can secure permission to do so. Do not talk to him, because that is not permitted, but just watch what he does. How would you like to do the things he has to do, day after day, and week after week?
9. Read the life story of James J. Hill, who built the Great Northern Railway, or of Lord Strathcona, who built the Canadian Pacific Railway, or of Leland Stanford, one of the builders of the Southern Pacific Railway. The lives of these men will give you a vivid picture of the difficulties that had to be overcome before transcontinental trains, such as the Oriental Limited, the Overland Limited, or the Olympian, could carry passengers with such speed and comfort as they now do.

SELECTED REFERENCES

1. Fairchild, C. B.: *Training for the Electric Railway Business*, 48–55; and 111–37.
2. Hill, Howard C.: *Vocational Civics*, 228–39.
3. Moffett, C.: *Careers of Danger and Daring*.
4. Platt and Farnham: *The Book of Opportunities*, 145–62 (steam and electric railways).

5. Rosengarten, Wm.: *Choosing Your Life-Work*, 299–307.
6. Tappan, Eva M.: *Travelers and Traveling*, chapter IV on Freight and Express.
7. Warman, Cy.: *The Story of the Railroad.*
8. Woodruff, R. E.: *The Making of a Railroad Officer.*
9. Ziegler and Jaquette: *Choosing an Occupation*, 189–217.

CHAPTER VII

HIGHWAY, WATER, AND AIR TRANSPORTATION TELEGRAPHIC, RADIO, AND MAIL COMMUNICATION

In addition to the railroads and the street cars, there are a number of other types of transportation and forms of intercommunication which we shall touch upon in this chapter. These are transportation by means of automobiles, trucks, drays, and express wagons; by ships, barges, and canal-boats; and by airplanes and dirigibles; also communications by mail, telephone, telegraph, and radio.

1. *Highway transportation*

Size of the business. There are now about 25,000,000 private automobiles, taxis, and busses, and about 4,000,000 trucks and tractors in this country. Approximately $350,000,000 were paid in registration fees and gasoline taxes, in 1927. Nearly all of this money was spent in improving old and building new roads and highways. There are as many miles of public highway as there are of steam and electric railway tracks in the United States. This all goes to show that highway transportation is of equal importance with these other types.

At first there arose what seemed to be a life-and-death struggle between steam and electric railways on the one hand, and auto-busses and trucks on the other, for freight and passenger traffic. It now appears that street-car and railway officials are going into the bus and truck business themselves. Some three hundred electric railways are operating busses to give service where it would not pay to build street-car tracks. Steam railways also are acquiring bus lines, and establishing bus and truck service in localities and under conditions where it would not pay to maintain branch rail lines. In many instances, also, railways have established bus lines parallel to existing rail lines, and others have made interchangeable ticket

arrangements with private bus lines. At least two transcontinental railroads employ busses to carry passengers on side-line trips to places of scenic interest. A further indication of the importance of the auto-bus as a passenger-carrying vehicle is the fact that thirty-nine States now regulate passenger busses as common carriers.

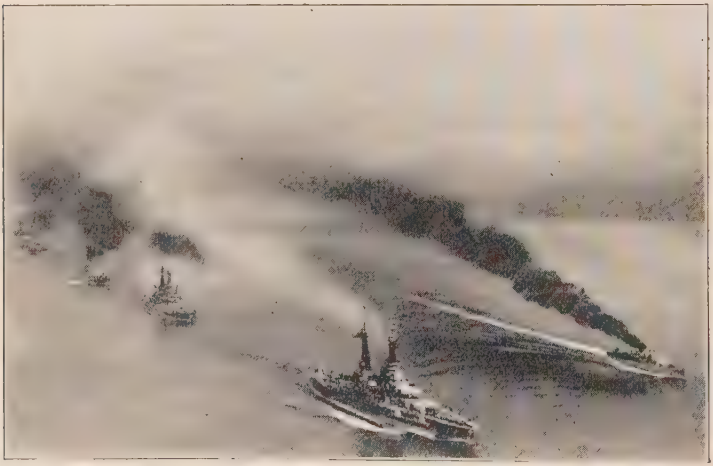
In the drayage, express, and delivery field the auto-truck has almost entirely replaced the horse-drawn wagon, but there are still certain types of hauling where heavy draft horses alone can perform the work. The railway express companies, which make a business of collecting and delivering all sorts of packages, make use of express cars on the railroads, and maintain fleets of drays and trucks to make deliveries in the cities. The United States Government also makes use of railway mail and baggage cars for the transportation of the mails and parcels-post packages, and employs auto-trucks for delivery purposes in the cities and on the rural free-delivery mail routes. A tremendous volume of business is carried on by these various agencies.

Types of positions. *The chauffeur* is an automobile driver who handles taxis or private cars for hire. Skill in automobile handling and in driving in heavy traffic, and some mechanical skill, are necessary qualifications. *The drayman* handles either automotive or horse-drawn drays for the delivery of every kind of merchandise. The work is usually heavy, since objects of all sizes and weights must be handled by the drivers and their assistants. *Managers of taxicab* and *delivery companies* need to know the territory served in order to direct chauffeurs and deliverymen to the correct addresses. The work requires business ability and training, plus a knowledge of automobiles and driving. *Express office managers* have very large responsibilities, as they are called on to handle many thousands of dollars in cash, and also articles of great value given into their care for safe transportation. Their employees must all be of proved honesty and, in addition, the company protects itself by taking out indemnity insurance. *Railway mail clerks* and *parcels-post*

deliverymen are government employees, who must pass civil service examinations to qualify for their positions. Skill in sorting mail, accuracy, and absolute reliability are necessary qualifications.

2. *Inland water and ocean transportation*

Extent of the business. Some 500,000,000 tons of freight, about one sixth of that carried by the steam railways, was carried by water craft, in 1925. Water transportation is, therefore, an important part of our total transportation business. It took 18,000 steam vessels and 7000 sailing vessels to carry the domestic portion of this freight, as well as many thousands of persons to handle it and navigate the boats.



UNCLE SAM'S DESTROYERS AND OTHER WAR CRAFT MANEUVERING IN THE LANDLOCKED WATERS OF PUGET SOUND

Vocations connected with ocean and river transportation have always been attractive to American boys because navigation seems to have large possibilities of romance and adventure. This may have been true of the days when all water

transportation was accomplished in sailing vessels, but it does not apply nearly so much to present-day methods of water travel.

Types of vocations peculiar to water transportation. *Able seamen* on the sailing vessel must know all about the handling of sails and gear peculiar to that type of ship. On the steam-driven ships there is very little handling of sails, but the able seaman must know how to use rigging screws, marlinspikes, calking tools, and serving mallets. He must also know every variety of knot and splice for ropes and wire cables, and be able to climb and work in places where hand hold and foot hold are precarious. In port and on long trips the seaman occupies his odd moments with deck cleaning, painting, and overhauling.

The boatswain, under the direction of the chief mate, has charge of the deck crew and supervises the washing of the decks, repair, and paint work by the seamen. *The watch officers* rank as third and fourth officers, and have charge of the taking of observations, frequently handle the signaling devices, and give instructions to the quartermaster. These officers must have had instruction in navigation. *The chief engineer* has charge of the junior engineers, deck engineers, firemen, oilers, and electricians, who under his direction take care of all the ship's machinery. *The ship's carpenter* takes care of the masts and booms, repairs the wooden decks, and attends to the coverings of the hatches, in addition to supervising repairs to any woodwork on the ship. *The chief steward* supervises sleeping accommodations, and looks after food and other items relating to the comfort of the passengers. He must see that proper supplies are purchased and stored while the ship is in port, and he superintends the work of the chefs, cooks, stewardesses, and porters.

The purser collects or supervises the examination and collection of tickets, acts as a sort of cashier for the passengers, takes care of their valuables and cashes their checks. He is bookkeeper and accountant, and has charge of manifests, clearance papers, and so forth, of the ship. He is the source of in-

formation, and often supervises the entertainment of the ship's guests. Under him are the freight clerks, stenographers, and other clerical workers. *The chief mate* is next to the captain in authority and responsibility. He is the chief executive officer, has charge of the loading, stowing, and unloading of the cargo, and is held responsible for discipline and order on the ship. The lifeboats and fire-fighting apparatus are under his control. He must have practically the same training and experience as the captain. *The ship's captain* has complete charge of the vessel. During storms or other emergencies he is constantly on duty, and, in case of shipwreck, he is the last to leave his ship. He must have a thorough knowledge of navigation, and has usually come up through most of the stages of employment on the ship to his place as captain. He must know the laws of the sea and of international trade. Above all he must be a man of courage, swift decision, and prompt action.

Other positions connected with water transportation, but not involving constant work on ships, might be mentioned. Steamboat inspectors, life-saving crews, lighthouse and hydrographic-service employees, pilots, harbor masters and port captains, warehousemen, stevedores, and longshoremen, all make their living in ways connected with shipping, harbors, and water-borne commerce.

3. *Air transportation*

A new business. The youngest member of the transportation family is the airplane. The World War gave a great impetus to aviation, and European countries were quick to develop commercial aviation, while the United States confined itself for several years to military and naval aviation. At present, however, there has been a revival of interest in commercial aviation, in part due to the spectacular flight of Colonel Lindbergh from New York to Paris, and his subsequent triumphal trip around the country during which he devoted his attention to stirring up interest in commercial flying.

The greatest stimulus to the development of air transportation has been the United States Government air-mail service. There were twenty-five air-mail routes in 1928, with a total airway mileage of 11,856 miles. The one between New York and San Francisco is 2669 miles long. The Federal Government is now encouraging private companies to accept air-mail contracts, with the idea of developing commercial air fleets which will carry passengers as well as mail. It is estimated that 6,000,000 miles were flown by American mail planes during 1927, and that over 4,000,000 pounds of mail and express were carried.

Requirements. Success as a commercial air pilot requires a practical knowledge of meteorology, gas engines, air navigation, map reading, and other sciences. Good muscular balance, strong physique, clear head, quick reaction in emergencies, and physical courage also are required of the aviator. It is probable that not one out of five, even among physically strong and capable young men, possess the necessary attributes for successful flying.

Commercial aviation includes a number of vocations which do not require plane piloting. It takes about twenty men on the ground to keep one pilot up in the air. Airplane mechanics, riggers, airdrome managers, shop foremen, aerial photographers and observers, and ground engineers, are among the types of persons required to keep an airplane in good repair, or to build new planes.

Because aviation is a comparatively new vocation, and also because in its beginning stages it is very hazardous, the development has been slow so far as passenger and freight transportation are concerned. That stage now is passed, and the next few years will see a development in this field comparable with the development in the field of automotive transportation between 1900 and 1925. The Department of Commerce estimates that there were in 1928 some 900 firms engaged wholly or partly in the aeronautical industry.

4. *Communications by mail, telephone, telegraph, and radio*

The vocations thus far treated in the transportation field have had to do with the transportation of persons or commodities. There are several important vocations which have to do with the communication of various types of messages from one person to another. Business, domestic, and personal relations, and political affairs are almost as dependent upon means of rapid communication of various types of messages as they are upon transportation of persons and goods.

Mail service. The United States Government sold 18,000,000,000 postage stamps and 1,500,000,000 postal cards in one year recently. Think of the number of letters and messages that the United States mail clerks had to handle, and the millions of pounds of mail matter carried by mail carriers and rural delivery men during that year!

Types of positions in the mail service. *Mail clerks* and *sorters* take the letters and packages as they are brought to the post office by the collectors and sort them according to class — whether first, second, third, or parcels post — and then they are sealed in the sacks to which they have been consigned and sent to their destinations. Then there are money order, stamp, and delivery-window clerks, who serve the public directly at their respective windows. *The mail carriers* have regular routes where they deliver mail and collect from the deposit mail boxes along the way, two or three times a day. *Parcels post deliverymen* and *rural free deliverymen* have autos or auto trucks in which to transport the mail and packages to the people along their routes. *Railway mail clerks* are post-office employees who have charge of the railway mail cars, guard the mail sacks in transit, and take care of mail that is gathered along the way, sorting it and putting it in sacks to be sent to proper destinations. They also look after the picking up, or putting off, of mail sacks at the proper stations along their routes.

Telephone service. The telephone service has become almost as vital to everyday life and business as is the mail

service. There was one telephone in service to every seven people in the country, in 1925, with 20,000 telephone exchanges, and something like forty billion telephone messages or conversations. It takes a large army of employees to keep the telephones in operation.

Telephone operators. Telephone operators are nearly all girls or women, who sit at switchboards and make connections for people who desire to talk over the telephone wires. The work is not difficult, but it is exacting and uses up nervous energy. Each exchange has its *head operator*, who is a kind of manager to see that everything is done properly and that complaints are investigated. *The wire chief* looks after the stringing of new wires, keeping old ones in repair, and seeing that the system is kept in operation during and after storms, fires, and so forth. *Electricians* look after the instruments, see that batteries are kept up, new connections made, and that the switchboard connections are in order. *Electrical engineers* supervise the entire system, improve service, make new inventions, and oversee installation of new exchanges.

Telegraph service. There are a number of great telegraph and cable companies which handle all sorts of messages, and relay them, if necessary, to any part of the world. Daily stock reports, market quotations, and news dispatches concerning what is going on in every civilized country are handled by the telegraph companies. Even the development of long-distance talking over the telephone, by which a person in New York can talk with another person in London, has not resulted in any reduction in the volume of telegraph business. In addition to the regular commercial telegraph lines, every railroad has its own telegraph system for communicating with agents, dispatching of trains, and the transaction of its regular business. This increases the demand for skillful telegraphers.

Among the positions open to persons skilled in telegraphy are those already described under railway transportation, that is, the railroad station telegrapher, and the train dispatcher. *Commercial telegraphers* work for stock and bond exchanges

in the great cities, for newspaper syndicates and such press agencies as the Associated Press and the United Press, and for the great telegraph and cable companies. A knowledge of the Morse code, together with quickness and accuracy in sending and receiving messages, is required.

Workers having duties similar to those mentioned under "Telephone Service" are employed to keep telegraph wires, poles, and other equipment in good condition. Among these are *linemen*, *wire-chiefs*, and *electrical engineers*, who have specialized in the problems connected with telegraph service. *Messenger boys* are employed to carry the messages from the receiving office to the individuals or firms to whom they are addressed. Many States will not permit persons under sixteen years of age to be employed in messenger work. The telephone is extensively employed in the cities for transmitting telegraphic messages quickly to patrons who have telephones in their homes or offices. This practice has materially reduced the number of messenger boys required.

Wireless service. The radio has now come to supply an additional means of communication. Powerful wireless transmitting and receiving stations are located along the Atlantic and Pacific Coasts; some under private management and some under government management. These stations transmit messages across the various oceans in every direction, reaching many parts of the world where cables have not yet been laid. Thousands of ships are equipped with wireless apparatus for sending and receiving messages. Passengers on the great ocean liners receive news of the world daily, and are able to send and receive messages as effectively as though they were on land. In case of disaster the ship sends S.O.S. calls, which are answered immediately by neighboring ships or land stations, and help is sent. The wireless operator on a ship, next to the captain, is the last man to leave a sinking ship. It is a task requiring courage, as well as skill. Wireless operators must have the same qualifications as telegraphers, since a code is employed and the sending and receiving instruments are very similar.

SENDING AND RECEIVING OPERATORS IN RADIO AND TELEGRAPH OFFICE

The broadcasting of programs, entertainments, and advertising material has come to be the most extensive use to which the wireless or radio station is put. Announcers and other employees of broadcasting stations number into the thousands, while entertainers, lecturers, musicians, and persons interested in publicity for merchandise or public enterprises, participate in every conceivable type of broadcasting program, every day and every night of the year. An automobile company recently spent $60,000 for one hour of time on a nation-wide "hook-up" which was said to have reached 20,000,000 to 30,000,000 people.

5. *Opportunities, training required, and income*

Highway, truck, and dray transportation. *Numbers engaged.* The following table is a statement of the number of persons engaged in the various Highway, Truck, and Dray Transportation vocations.

Vocations	Males	Females	Both
Carriage and hack drivers	8,966	91	9,057
Chauffeurs	284,096	949	285,045
Draymen, teamsters, etc.	410,484	648	411,132
Foremen and managers	3,866	2	3,868
Garage keepers and managers	41,944	207	42,151
Garage laborers	31,339	111	31,450
Hostlers and stable hands	18,973	3	18,976
Foremen, construction and road-building	9,557	1	9,558
Laborers, construction and road-building	126,865	167	127,032
Livery-stable keepers	11,168	72	11,240
Managers and owners transfer companies	23,231	266	23,497
Totals	970,489	2,517	973,006

Such transportation vocations as the highway, truck, and dray businesses do not attract very many women workers, there being only about one woman to every 350 men workers in these lines. Women chauffeurs are relatively the most numerous. The women connected with transfer companies probably are performing the duties of office managers. The same is true of the women listed under several of the other vocations in this field.

Training. No special training is required for the above group of vocations, except for office workers and business managers, for which positions there must not only be training in clerical work, but actual experience in the type of business in which one hopes to rise to the position of manager. One learns to become a teamster by handling and driving, and taking care of horses, and the same is true of chauffeurs and auto-truck drivers. Elementary schooling is all that is required, in most cases.

Income. A teamster, chauffeur, truck-driver or other worker, using his employer's horses, automobiles, or trucks, receives from $5 to $8 a day. One who owns his own horses, car, or truck receives about double the above amount to compensate him for his investment and the up-keep of the equipment. If one is running his own truck, taxi, automobile, or dray as an inde-

pendent proprietor, he charges regular rates for service, pays all expenses, and has as income what is left over. Sometimes this plan is better than wages, and sometimes it is not. It is in this small way, however, that most of the big companies have grown up. Some capable man has started for himself, secured more business than he could handle alone, and been compelled to employ others to help him. Such a man needs not only skill in the mechanical and practical aspects of the vocation, but good judgment and business ability, plus plenty of energy.

Ocean and inland water transportation. There is a fair-sized army of men and a few women, engaged in water transportation vocations, as is shown in the following table:

Vocations	Males	Females	Both
Boatmen, canal and lock keepers	6,286	33	6,319
Captains, masters, mates and pilots	26,318	2	26,320
Longshoremen and stevedores	85,605	323	85,928
Sailors and deckhands	54,800	32	54,832
Foremen and overseers	3,488	..	3,488
Other workers	7,716	24	7,740
Totals	184,213	414	184,627

Water transportation is another vocation in which very few girls and women engage. Those engaged as longshoremen and stevedores are usually markers or checkers, and not the loaders and handlers. Women sailors and deckhands are probably listed as such because they travel on river boats with their husbands, and are enumerated by the census takers as part of the crew of the boat because they perform some sort of service for pay. The two women captains are full-fledged and certified navigators, and hold captain's papers.

Preparation. Preparation for most of the above-listed vocations is by the "work at the job" method. A young chap secures a job as a deckhand on a river or sound boat, and works up to the rating of able seaman. Longshoremen and stevedores must be strong and quick, and able to endure long sieges of heavy work. The time required for training is not long, but

the men in these vocations are usually well organized and it requires considerable experience to qualify as a member of any of their unions.

Income. The income in these vocations is varied. The poorest paid workers are the sailors and deckhands, who receive from $60 to $80 per month and "found," that is, board and room while on their ships or boats. Captains, masters, mates, and pilots receive from $100 to $600 per month, depending upon the size of the ship, its character, whether freight or passenger, and the company. It is for these positions that the longest training is required, and also considerable intensive study of navigation. Longshoremen and stevedores receive much better pay than do sailors and deckhands. Their pay is from fifty to ninety cents an hour, and they often work overtime, for which they receive "time-and-a-half" or "double time." Their work is irregular, and hence a first-class seaman with smaller daily wages, but steady employment, may have a better annual income than longshoremen and stevedores. Next to the captain and chief mate the best paid man on the ship is the chief engineer. He requires a long, technical training, and receives from $150 to $450 per month. Pursers and clerical workers receive the current wages for persons in those vocations in regular offices, except that they receive their board and lodging in addition.

Express, telegraph, telephone, and mail service. There are nearly one million people engaged in express, telegraph, telephone, and mail service distributed as shown in the table on page 107. In these vocations women are about one half as numerous as men, but it is the vocation of telephone operator which attracts the greatest number of girls and women. There are fifteen times as many women as men in this vocation. There are four men telegraph operators to one woman, and seven men post-office employees to one woman. Women in the other express and communications vocations represent a very small percentage of the total numbers engaged.

Training. Training for most of the vocations discussed in

Vocations	Males	Females	Both
Express agents	5,193	100	5,293
Express messengers	9,129	9	9,138
Railway mail clerks	15,867	...	15,867
Mail carriers	90,131	1,320	91,451
Other post-office employees	222,783	34,184	256,967
Linemen, telegraph and telephone	37,905	12	37,917
Telegraph operators	62,574	16,860	79,434
Telephone operators	11,781	178,379	190,160
Foremen, telegraph and telephone	6,797	25	6,822
Inspectors, telegraph and telephone	2,491	330	2,821
Proprietors and managers	11,059	544	11,603
Radio announcers and assistants in broadcasting	15,000	...	15,000
Laborers, express company	9,067	22	9,089
Laborers, telegraph and telephone	50,011	77	50,088
Laborers, semi-skilled	1,410	421	1,831
Totals	506,198	232,283	738,481

this section is of the type that is secured "in service." All post-office employees must pass civil service examinations, which are usually of a clerical and informational nature, with certain credits for amount of schooling. Telegraph and radio operators pick up their training in night schools, high schools, and regular training schools maintained by the various companies. High-school graduation is very desirable, from the standpoint of maturity and range of information and experience. Telephone companies usually maintain schools for the training of their operators. A few weeks of training is all that is required to enable a girl to make a start at earning a small salary. Promotion and increase of pay comes with proved capacity for the work. The engineers connected with telephone and telegraph companies have usually received their engineering training at a university or technical school. The larger companies take young men, upon graduation, and give them intensive training, for from six months to a year, along the special lines of their needs, paying them a small salary while they are in this training division.

Income. The pay of telephone girls is the lowest of any of

the workers in the vocations under discussion. Starting sometimes as low as $7 or $8 per week, the pay seldom goes above $20 per week, except for managers and chief operators. Telegraphers and radio operators receive from $100 to $250 per month, depending upon speed, accuracy, experience, and the nature of the work. Train dispatchers are the highest-paid members of this craft. Express messengers, mail clerks, and express agents receive salaries comparable with those of bookkeepers and junior accountants. Mail carriers and mail clerks receive the following incomes: Railway postal clerk, $1900 to $2700; post-office clerk, $1700 to $2300; city mail carrier, $1700 to $2100; and rural mail carrier, $2100 to $2300.

Air transportation. In addition to the air-mail service previously mentioned in this chapter, air transportation was making use of 864 municipal, commercial, and private airports or landing fields. Additional airports were under construction in 150 cities. Airways are being lighted by great beacons on high buildings, hills, and mountain tops, and smaller lights, or "blinkers," flash their signals to the pilots of mail and passenger planes during the night. In all branches of aviation — air-mail, commercial, army, and navy, including also individual flying for business and pleasure — it is estimated that there were over forty million miles flown in 1927, and that some seven hundred thousand passengers were carried.

Training. There are about 3000 civilian air pilots in the country, only about one half of whom are licensed by the Department of Commerce, through its Division of Aeronautics. Flying schools are maintained by the Government, in connection with the Army and Navy, for the training of military pilots. The severity of this training is illustrated by Colonel Lindbergh's description of his own training at Brooks and Kelly Fields, in his famous book *We.* In his class only eighteen received their "wings" as second lieutenants in the Air Service Reserve Corps, of the one hundred and four cadets who had entered to take the course at Brooks Field, the year before. The importance of this long and difficult grind of training is

brought out by the fact that over ninety per cent of the fatal airplane accidents, in 1927, were in planes piloted by amateur or unlicensed pilots.

There are 28 army flying fields, and 11 naval air stations. The Army has an air force of 884 officers, and 8700 enlisted men. The Navy has 650 officers, and 3500 men in its Air Division. Commercial air-transportation companies, as well as the government air-mail service, have heretofore depended upon military aviation training schools to supply them with well-trained pilots. At present, however, there are a number of private schools of aviation, with an estimated number of students in the neighborhood of 4000. A few high schools are offering courses in aeronautics and "ground work," as prevocational training for prospective aviators, or for those who expect to go to college and take courses in aeronautical engineering. Congress passed a resolution, at the last session, requesting that in each high school a teacher of science be requested to make short lectures on the most essential aspects of air navigation, and that elementary-school teachers also should give frequent talks to their children on aeronautics. Thus it is hoped that the supply of trained pilots, mechanics, and engineers will keep pace with the increasing growth and development of this important branch of transportation.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. When a railroad buys up competing bus and truck lines, does it put them out of business or does it continue to run them?
2. In what kinds of work is it more economical, as well as more efficient, to employ horses and mules?
3. When the United States Government established the parcels post it was predicted that the railway express companies would have to go out of business. Why didn't that prediction come true?
4. What are some of the disadvantages of being a railway mail clerk?
5. How does it happen that there are so many boys from the Middle West in the Naval Training Schools?

6. What school subjects have a bearing upon air and water navigation?
7. When Colonel Lindbergh made his non-stop flight to Paris he "flew blind" most of the way. What does that mean?
8. An Ohio farmer recently wrote to the Postmaster General that low flying air-mail planes frightened his flock of leghorn hens to such an extent that he was not getting his customary yield of eggs. What do you suppose the hens thought the airplanes were?
9. Before taking a ride in an airplane one should be sure that the plane has been inspected, and the pilot properly licensed by the Aeronautics Division of the United States Department of Commerce. Every licensed pilot is required to keep his papers where they can be inspected by interested persons.
10. Why is it that telephone operators are the poorest paid, as a general rule, of those engaged in vocations having to do with transportation and communications?
11. It requires many years of faithful service, plus thorough knowledge of navigation, before one can become captain of a great passenger ship. Why is this?
12. What are some of the physical tests applied which aviation students must pass in order to be permitted to begin flying lessons?
13. If one could not qualify for training as an aviator, what other branches of air-transportation service could he try for?

SELECTED REFERENCES

1. Arnold, H. H.: *Airmen and Aircraft.*
2. Fryer, Douglas: *Vocational Self-Guidance*, 256–59.
3. Hausmann, Erich: *Telegraph Engineering.*
4. Lindbergh, Charles A.: *We*, 104–52 (training for aviation).
5. Meyer, Wastrel: *Practical Radio.*
6. Platt and Farnham: *The Book of Opportunities*, 136–45 (water transportation); 162–63 (highway transportation); 164–67 (air transportation); 170–77 (telephone, telegraph, radio).
7. Wells, Linton: *Around the World in Twenty-Eight Days.*
8. Williams, Archibald: *Conquering the Air.*
9. Ziegler and Jaquette: *Choosing an Occupation*, 189–217.

CHAPTER VIII

MINING VOCATIONS

1. *Nature of the work*

Types of mining. The work of the miner requires him to dig into the earth and bring to the surface the coal, iron, copper, gold, silver, lead, zinc, and oil that are so necessary to our industrial life. In any given year the total value of the farm products of the country far exceeds the value of the mineral products, but the products of the farm are consumed each year, while metal products last for a long time and are changed into all sorts of beautiful and useful articles. On the other hand, mineral resources, when once exhausted, are gone forever, while agricultural land, if well tilled, is capable of producing crops for hundreds of years. In this fact lies a clear-cut distinction between mining and farming as a vocation. The farmer, if his land is fertile, can stay in the same locality all his life and make his farm more productive, through scientific agriculture, than when he began to cultivate it. The miner moves from place to place as one ore body, coal deposit, or oil field after another is worked out.

Where mining is carried on in small units the work is very strenuous, and is performed by hand with hammer and drill, pick and shovel, and wheelbarrow. Where it is carried on in large units by great corporations, every form of labor-saving device is employed, such as compressed-air drills, steam shovels or scoops, tram cars, electric engines, forced ventilation, and every type of safety appliance to safeguard the lives of the workers. Mining is a very dangerous vocation, not only on account of the fact that it is necessary to handle high explosives constantly, but because of bad air and gases in the deep underground shafts and tunnels, cave-ins and rock slides, defective machinery, or careless fellow workers.

Boys who live in mining communities are in a position to

know all about its dangers as well as its attractions. Very few, perhaps, who have the opportunity of entering more attractive vocations will want to spend their lives trying to wrest from the earth its store of fuel, metals, and oil. It is a very necessary type of work, however, and those who engage in it are rendering a distinct social service. They are entitled to respect for their courage in undertaking a vocation where such a high percentage of their fellows are killed or injured every year. They are also entitled to every consideration in the form of legislation compelling the employment of safety devices and precautions which tend to make their work less hazardous.

2. *Kinds of mines and types of work*

Coal mines. There are coal-mining areas all over the United States. Most of the hard coal, or anthracite, is found in the State of Pennsylvania, and the greater part of the soft coal, or bituminous, is found in the upper Mississippi Valley. The mines vary in kind from the simple banks of coal that require only the removal of a shallow layer of soil before they are available for use, to the elaborate underground diggings, where the ingenuity of the best engineers is required to make the mining operations profitable. In these difficult pits men work narrow seams where they can hardly crawl, using gouges and small hand picks, and removing the coal in baskets. Where the coal veins are large, comfortable shafts and tunnels are dug, and tram cars hauled by mules or by small engines remove the coal. Labor-saving machinery is employed in these high-class mines, and life in them is not so hard.

Gold, silver, lead, zinc, and iron mines. *Gold* is often found in nugget form in the gravel of creek beds, or in decomposed quartz that can be crushed easily and run through a stamp mill. In this free state the gold can be separated by the panning or sluicing process. It was this type of gold mining which attracted the "Forty-Niner" to California, and the "Sourdoughs" to Alaska. By working his claim with his pick,

shovel, and pan, or by placer mining, the individual miner was able to secure his gold direct, save it until he had a stake, and sell it to the representative of the American or Canadian Government, or to some bank which had the necessary means of weighing and testing the gold.

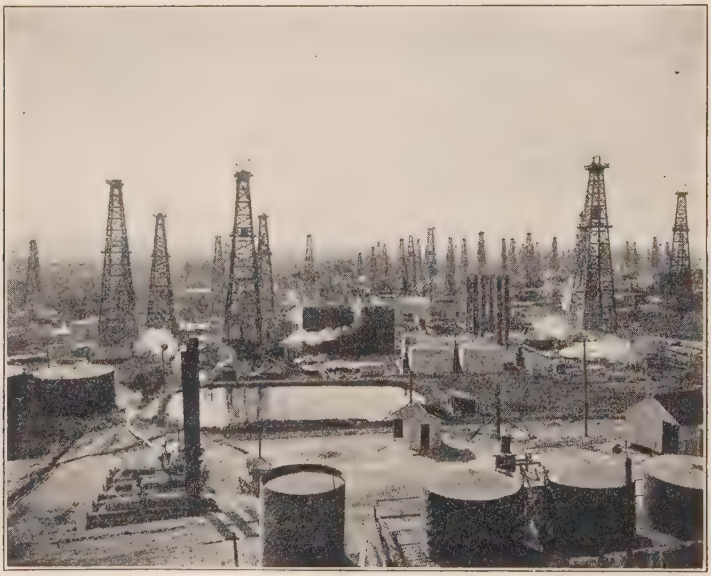
Silver, iron, zinc, lead, and copper are usually found in combination with other baser minerals, and the ore must be mined by means of tunnels, shafts, or open quarries or pits, and transported to the smelter, where it is subjected to various processes to separate one metal from the other. This type of mining requires a great deal of capital, and all sorts of heavy machinery. While not as dangerous or as disagreeable as coal mining, it is rough and heavy work, and the conditions of living in the ordinary mining town or camp are not particularly attractive for workers who have families to bring up.

Cement. The production of cement is a combination of mining and manufacturing. The cement plant is usually located near large deposits of clay and limestone. These products are mined or quarried, and in the cement mill are reduced to powdered form, heated, and combined in the necessary proportions to be sacked for delivery. The work is very dusty, and the workers have to take precautions to avoid diseases of the throat and lungs.

Stone. While cement has taken the place of stone in many types of construction, there is still a large demand for marble, granite, and sandstone for trimming and exterior finish. There is a beauty in the natural stone that cannot be equaled by the cement. Improvements in the methods of cutting stone by means of diamond-toothed saws, air-driven chisels, and so forth, have transformed the work of quarrying stone, and given it a chance to compete with the cheapness of the various cement products. Stone cutting involves all grades of work from that of handling the mechanical saw and drills in the quarry, to that of carving delicate patterns and figures for the decorative parts of great buildings.

Oil. Oil production has come to be one of the most impor-

tant departments of the mining industry. Since gasoline and lubricating oil must be produced to keep our twenty-five million automobiles running, it is necessary for the crude oil supply to keep up with the demand. New fields are constantly being discovered and developed as old fields are pumped dry. Oil wells are not dug in the sense that mines are dug, but they are driven, or sunk with heavy drilling equipment, operated by means of a derrick or oil rig, run by steam, electricity, or compressed air.



AN OIL FIELD, WITH DERRICKS, STORAGE TANKS, EMERGENCY STORAGE POOLS, AND BATTERIES OF STEAM BOILERS FOR GENERATING POWER FOR OPERATION

The number of positions in connection with the oil industry is much smaller than is the case in coal or quartz mining. Except for the men who run the rigs, the foremen, the managers, and the oil engineers, the work is performed for the most part by men who have learned the work on the job. Since there is

no underground work, very little use of explosives, and most of the work is performed out of doors, oil drilling is more healthful and less dangerous than coal or quartz mining.

Types of positions open in mining. *The prospector.* The person who spends his time hunting for mineral deposits or veins is known as a prospector. He is usually a hardy mountaineer, who packs his blankets, tools, and food on a horse or burro, and goes out by himself to explore the mountains or other regions where there are minerals to be found. He must be both a practical miner, able to do development work on a prospect, and also a practical geologist who knows the favorable rock formations in which various minerals are most likely to be found. He pans the creek beds for signs of gold, and watches for float, or signs, deposited along the courses of mountain streams, which indicate the kinds of mineral deposits through which the stream is flowing. It is a lonely but alluring life. Many a man has grown gray in his quest for the mother lode, or great mineral vein, of which all prospectors dream, but which eludes most of them. Even if the prospector makes a strike, he usually sells out his interest to some company, and goes out again to find a still greater mine. He is an explorer, not a developer.

The miner works with pick and shovel, and with hammer and drill in the bottom of the shaft or at the face of the tunnel. In the larger mines he uses compressed-air drills for driving deep holes into the rock. These holes are loaded with giant powder, tamped with clay or dirt and exploded with a percussion cap at the end of a long fuse. After the smoke clears away, the miner's helper, or mucker, as he is called, pulls down the broken rock with pick and shovel and removes it in a wheelbarrow, tram car, or large ore bucket. Then another series of holes is driven and the process is repeated. The ore is emptied on the dump, or sent to the concentrator or the stamp mill to be prepared for shipment to the smelter.

Shift bosses, mine foremen, superintendents, and general managers oversee the work of the miners, decide how the shafts

are to be sunk or the tunnels driven, attend to securing supplies, shipping the output of the mine, and generally supervise all the mining operations. *Blacksmiths* sharpen the drills and look after the other tools. *Machinists* take care of the machinery, and keep the various power drills in order. *Timbermen* secure and put in place the necessary timbers to keep shaft and tunnel walls from caving in. *Surveyors* plan the drifts, establish levels for sluiceways, and lay out roads and tramways. *Assayers* take samples of the ore and find out its gold, silver, or other mineral content. *Mining engineers* study the geological formations to determine the extent of the mineral deposits, and the direction which shafts and tunnels should take to extract the ore to best advantage.

In the oil fields there are the *derrick men, the drillers, the engine men,* and the *roustabouts,* or jacks-of-all-trades, who do all sorts of odd jobs. *The oil engineer* does for the oil fields what the mining engineer does for the quartz mines — he determines where wells should be sunk, studies the character of the strata through which the drill is being driven, and in general gives expert advice to the owners and operators.

3. *Numbers engaged, training, and income*

Numbers engaged. Workers in mines, oil fields, and quarries, according to the Census of 1920, were distributed as follows:

Vocations	Male	Female	Total
Foremen, overseers, and inspectors	36,923	8	36,931
Operators, officials, and managers	34,143	182	34,325
Coal mine operatives	732,441	1,495	733,936
Copper, gold, iron, silver, lead, and zinc mine operatives	148,471	376	148,847
Quarry operatives	45,084	78	45,162
Gas, oil, and salt well operatives	90,297	725	91,022
Totals	1,087,359	2,864	1,090,223

LEARNING TO BECOME AN ASSAYER

In the vocations connected with mining there is only about one woman to every four hundred men. It is a little difficult to imagine just what tasks connected with mining could be performed successfully by women, but the census enumerators found 2864 of them earning their livings in some capacity connected with mining operations.

It is said that there are nearly twice as many coal miners as can properly make a living in that field. This means that coal miners can expect work only about half of the time. Until this condition is remedied, no more young people should enter that field. All the other mining vocations combined have 256,287 operatives.

Income. The wages paid in subordinate positions in the mines are a little higher than those paid for the same services or general ability in other lines. One reason for this is to be found in the fact that miners are subjected to great dangers, and have to work under rather unfavorable conditions. Miners receive from $4 to $8 per day, but their working days are fewer

than is the case with most other trades. Wages in the oil fields are not quite so high as in the mining camp, except for the more expert workers, but the working conditions are better and employment is steadier. Mining and oil engineers receive high salaries when they have gained sufficient reputations, but it takes many years of successful work to bring the larger fees and salaries. Most young engineers have to begin on salaries of from $150 to $300 per month.

Training. Training for the mining vocations is secured by taking subordinate positions, such as helper or "mucker," learning how to handle hammer and drill, or power drills, and finally being promoted to the miner's work and pay. Foremen and superintendents are men of long experience, possessing executive ability, and considerable technical knowledge. This knowledge is sometimes gained in schools of mines, but usually through individual work and observation. Mining and oil engineers usually have had training in schools of mines, engineering departments of universities, or in technical schools. Until they have had considerable practical experience they are not entrusted with heavy responsibilities, and receive rather nominal pay. For capable, energetic men, however, the chances of promotion are good.

The work of the stone quarryman and the stone cutter, in yards where stone is prepared for construction work, is quite varied. This type of work is usually learned on the job. Men who are art stone or marble cutters require a long and a careful apprenticeship. For this type of work the pay is high, ranging from $6 to $12 per day. The number engaged in this type of work is rather limited. Regular quarrymen and stone cutters receive from $4 to $8 per day, and employment is likely to be steady for the best grade of workers.

Since the coal mining industry is very much overcrowded with workmen at present, and since other types of mining vocations are often disagreeable and frequently quite dangerous, the number of junior or senior high-school boys interested in these fields as possible vocations for themselves is no doubt

small. If one is thinking of preparing for mining or oil engineering, it is important to know the facts about the basic industries with which such engineers must be associated. In fact, a desirable part of the training for these two engineering vocations is to secure work during summer vacations in mines or oil fields, in order to become familiar at first hand with the practical workings of a mine, or the processes involved in drilling for oil.

SEEK-FURTHER QUESTIONS AND SUGGESTIONS

1. Try to locate, in your community, a person who has had some experience as a prospector. Have him tell you about his experiences; how he knows when he has discovered something worth developing; also about the difficulties encountered in persuading persons with money to grub-stake him; or, after a prospect has been located, how hard it is to get the money to demonstrate that it is a paying proposition.
2. Read what you can find about the breaker boys in the coal mines. How would you like to sit for long hours and pick out the slate from the coal?
3. Study the causes of accidents in coal mines, or in lead and silver or other metal mines. Find out whether the percentage of injuries in such vocations is on the increase or on the decrease.
4. Some of the oldest granite quarries in the United States are located at Quincy, Massachusetts. Great slabs of granite weighing tons are handled easily with hoists and derricks. If there is a stone quarry near your home, visit it and watch the men at work.
5. A young mining engineer, just out of college, undertook to supervise the building of a flume to carry water from a mountain stream to a concentrator, which had just been built. He made his calculations on the basis of the amount of water in the stream in May. When the flume was built and the owners tried to get water for the concentrator in August, it was found that the water in the stream was so low that none of it would go into the flume, so they had to spend several thousand dollars in raising the height of the concrete dam. What was the trouble with the young engineer?
6. In order to get an idea of the importance of the oil business, let the members of the class each make a list of the products manufactured from crude oil, giving an estimate of the number of gal-

lons, barrels, or pounds of each product consumed in this country each year.

7. Write to the State Bureau of Mines, if there is one in your State, for a pamphlet describing the kinds of safety devices which mine owners are required to install in their mines.
8. It is reported that coal-mine workers are demanding a seven-hour day and a five-day week. This sounds as though they were striving for shorter hours and fewer days. As a matter of fact, in many of the fields they have work for only about three days out of the week, and for five or six hours per day. This condition is the result of there being too many workers in that industry.
9. When the miner has drilled his holes and loaded them with giant powder, he attaches fuses, each of which is two or three inches longer than the preceding one. This is done so that the shots will go off one at a time. As they go off the miner counts them. Why?

SELECTED REFERENCES

1. Gibson, C. R.: *The Romance of Coal.*
2. Hill, Howard C.: *Vocational Civics*, 182–87.
3. Kier, Malcolm: "The Epic of Industry" in *The Pageant of America*, vol. v.
4. Platt and Farnham: *The Book of Opportunities*, 25–34.
5. Tappan, Eva M.: *Diggers in the Earth.*
6. Tower, Walter S.: *The Story of Oil.*
7. Ziegler and Jaquette: *Choosing an Occupation*, 107–21.

CHAPTER IX

FACTORY WORKERS

1. *Nature of the work*

THE farmers, lumbermen, and miners handle what are called raw materials. Factory and machine workers make these raw materials into something that man can use. They cut a saw-log into boards for the building of houses and the making of furniture. They take the hide of a cow or a sheep and make it into leather from which shoes, harness, and tooled-leather products are made. They extract the iron ore, and make it into steel from which watch springs, knives, tools, locomotives, automobiles, or ships may be made. The word "manufacture," derived from the Latin, originally meant "made by hand," and that was the method employed in every kind of craft up to one hundred and fifty years ago. Now, however, manufacturing refers primarily to the process of making things by machinery, and the place where things are thus made is called a factory.

Types of factory labor. Factories in this country vary from the one-room plant of a very small manufacturer, who employs two or three men, to that of one of the great automobile concerns which, including all its different branches, has literally many square miles of floor space and employs thousands of men. The jobs of the men who are employed in these factories vary from that of the common laborer, engaged on routine unskilled tasks, through the jobs of the semi-skilled workers, and the various levels of skilled operatives to the semi-professional and professional men employed in the research laboratories.

The objection to most factory work is that it is usually of the common-labor or semi-skilled variety. Each job has to do with a specific piece of machinery, and the work can ordinarily be learned by a person of average intelligence in a very short time. The wages tend to be low, and the hours long, especi-

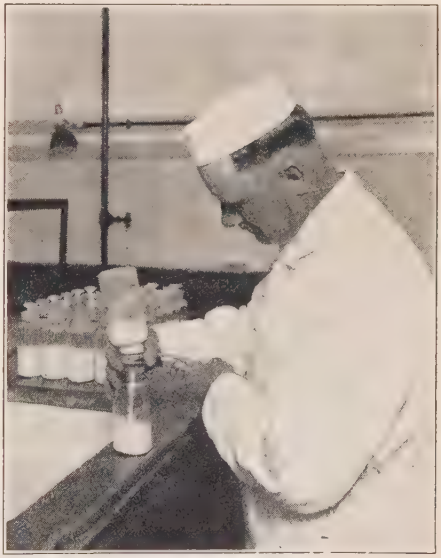
ally in factories which have to meet keen competition. Where special patented articles are made, the conditions of employment are somewhat better. If one is able to find employment in a factory that runs steadily, where working conditions are good, and where there is a living wage, the work is attractive to many people. The person who is satisfied with factory work is usually one who enjoys routine tasks which require very little energy or thought, and which can be immediately dismissed from the mind when the whistle blows at closing time in the evening. As was said in reference to mining, there are probably not many junior or senior high-school boys who will be planning to become factory workers, but a knowledge of factory conditions, and of the processes involved in the making of the articles of common use, is a great asset to a person in almost any vocation. The more the lawyer, the engineer, the banker, or the business man knows about the different kinds of work that people do to make a living, the more intelligent they become in working with and for their fellow men.

Types of factory work. The modern factory system stresses the making of a product under efficiency methods. The factory is so organized that each operation can be done in the shortest possible time, and with the least cost. If for the sake of speed and economy it is necessary for men to go through only a simple series of motions, from morning until night and day after day, then men will be found who are willing to do that type of work. Under this system no one man makes all of any one article. The finished product is the combined result of the small contributions of many workers. There is, under the factory system, very little pride of workmanship or sense of satisfaction in having created something, as was the case among craftsmen before the beginning of the machine age.

There are some forty or more groups of manufacturing industries, and within each of these there are many varieties of jobs or tasks. For example, in the shoe industry seven or eight different departments would be found, in a given factory, and as many as one hundred and fifteen different operations are

performed in the making of a shoe. It would be impossible, therefore, to describe each factory, or even that of any one great industry, in detail. In consequence, only those manufacturing vocations will be touched upon which employ the greatest number of workers. Detailed study of specific industries will be left to individual pupils, to be made on assignment by the teacher.

The chemical industries. In addition to the chemical and physical research activities of nearly every type of industrial concern, there are certain industries devoted exclusively to the making of chemical products. Such common raw materials as wood, coal, and petroleum are now broken up into their chemical elements and made over into a great variety of new and useful products.



CHEMIST TESTING POWDERED MILK FOR SOLUBILITY

Drugs and medicines. Many millions of dollars' worth of medicines and drugs are consumed each year. The elements from which these drugs and medicines are compounded are extracted from various products by chemical processes.

Fertilizer factories. The more farm land is worked in the raising of crops, the more it needs to be renewed. This renewal is accomplished by the use of fertilizers. The natural fertilizers, formerly employed, are heavy and difficult to transport. The chemical industries are now providing cheap, light, and easily

transported fertilizers. The manufacture of synthetic ammonia fertilizers from atmospheric nitrogen means that the farmers can secure a highly concentrated fertilizer at reasonable rates. Calcium cyanamide ranks second in importance as a fertilizer made available by chemical processes.

Dyes and paints. During the World War we discovered our dependence upon Germany for the dyes used in the manufacture of cloths and textiles, of every kind. The Government subsidized chemical plants for the manufacture of dyes, and much progress was made in the development of this industry. Since the War many German chemists, formerly engaged in the dye industry in Germany, have come to this country to find employment.

The value of paint as a preservative of wood and iron surfaces, as well as its æsthetic uses, makes certain that this industry will continue to expand with the development of building and other industries. The manufacture of the basic elements that go into the composition of paints, is now usually combined with the making of prepared paints in all possible color combinations.

Cosmetics. Cosmetics are compounded of lead, mercury, bismuth, antimony, and arsenic, and are employed for purposes of make-up in theatrical performances, or by persons who think to improve on nature by the application of paints, powders, and liquids of various sorts. Whatever the reason for their use, the making of cosmetics has now become one of the most profitable of the chemical industries. This is indicated by the millions of dollars spent annually in advertising cleansing creams, facial lotions, and other items employed in an effort to retain or restore a good complexion.

Other chemical industries. The increase of all sorts of pests which destroy plant, as well as animal life, has stimulated the manufacture of sprays, insecticides, and other means of combating the enemies of man in field, garden, and house. Then there are the industries which make powder, dynamite, fuse, and other explosives. Railroad building, mining, excavating

for buildings, and road building call for the use of many tons of explosives. Fireworks are not so universally used in Fourth-of-July celebrations as formerly, but their manufacture still is rather a large industry. Americans use more soap than any other people, therefore the making of soap is an important industry.

The clothing industry. The clothing industry may be classified into two main types:

1. *Hand- or custom-made clothes.* The making of suits, overcoats, cloaks, dresses, and other garments to order is usually accomplished in small shops, where one tailor or dressmaker carries on his or her own business, doing the measuring, cutting, fitting, and all the other parts of the work alone. There is also the shop employing several workers, who specialize on various parts of the garment-making task, such as cutters, fitters, sleeve makers, buttonhole makers, pants makers, and so forth. Made-to-order garments usually cost more than factory-made garments, because the cost of the labor is greater and because attention is given to the fitting of the garment, thus giving it a certain individuality. The making of women's hats is another branch of the clothing industry where individual, or made-to-order methods, as well as factory methods are employed. Made-to-order hats, as well as suits and dresses, are the product of small-unit shops, where the proprietor usually works with the other skilled workers. When these trades are carried on in this way they are really skilled trades, but they represent manufacturing on a small scale which can best be described with the clothing industries.

2. *Factory-made, or ready-to-wear clothes.* By far the greatest number of garments and articles of wearing apparel are made in factories where each worker performs some small fraction of the work which contributes to the completed garment. Instead of cutting out one garment at a time, as is done in the custom-made garment industry, hundreds of garments are cut out at one time by large cutting machines. Sewing, buttonholing, and other operations are also accomplished by machine

methods. Whatever handwork there is usually is done on the single-operation basis, so that the worker becomes very expert in doing this one thing and can turn out hundreds of pieces per day. Working conditions in the garment trades, such as shirt factories, overall factories, women's suit, cloak, and skirt factories, men's ready-to-wear suits, overcoats, and so on, are often very unsatisfactory. Poor lighting, poor ventilation, out-of-date machinery, long hours and poor pay, are not unusual. Where the workers are organized, however, they have frequently been able to secure improvements in working conditions and better wages. Many States also have laws which require manufacturers to observe certain conditions that help to insure the health and welfare of their employees.

AN EXHIBIT OF MILLINERY AND OTHER ARTICLES MADE BY A HIGH-SCHOOL CLASS IN HOUSEHOLD ARTS

The textile industries. Closely related to the clothing industries are the textile industries, which manufacture all sorts of cloth. Cotton, hemp, silk, wool, and other fibers are woven into cloth, which in turn is made into garments, carpets, silk

goods, lace, embroidery, tent cloth, awning and sail cloth. Textile mills usually are located where there is an abundance of cheap power, either water power or electricity. Textile factories are customarily located near large population centers where workers are numerous. Except for the weavers, loom-fixers, and other skilled operatives, the workers in these industries perform very simple routine tasks. It is in connection with the textile industries also that much of the child labor, outside of agriculture, is employed. This condition results from the fact that many of the operations require little strength and less skill, and can be performed fairly well by children twelve years of age, or even less.

The food industries. In the days of our grandmothers all food was prepared in the home, but to-day every variety of food may be secured ready to eat with a minimum of preparation or warming up. Bakeries prepare bread and pastry of every kind; canneries put up fruit, vegetables, fish, and meat; butter, cheese, and milk are packed or preserved in cans. There are also candy, cooky, and cracker factories. Packing houses prepare beef, mutton, and pork for preservation in refrigeration plants and for delivery to retail shops on demand, and millers prepare the wheat, oats, barley, and rye for the use of the baker or the housewife in the making of bread and cereal foods of every description. Working conditions in food factories are usually better than in other factories because they are required by law to be kept perfectly clean, and to be well ventilated and sanitary in every way. Work in the food industries is usually more steady than in other lines because, unless there is a great oversupply, consumption is steadier. People must eat, whether they have new clothes or not.

The shoe industry. Like the clothing industry, the shoe industry may be divided into two main types:

1. *Custom-made shoes.* There are thousands of shoemakers, scattered all over the country, who make and mend shoes. Most of their work is now confined to the mending, but they must know the trade and be able to make shoes to order, if

necessary, for people who want shoes made to fit their feet as well as their fancy. Up-to-date cobblers' and shoemakers' shops, now, however, are equipped with all sorts of labor-saving machinery, so they are really little shoe-factories. The greatest service rendered by the cobbler who works by himself in his little shop, is that of making shoes last longer by timely repair. In the cities there are regular "shoe hospitals," run on factory lines, where one may have a pair of shoes half-soled "while you wait."

2. *Factory-made shoes.* Factory-made shoes are now so scientifically put together that only the rich or extravagant can afford to have shoes made by hand. Sizes, shapes, and styles to fit every taste are provided, and at very low cost compared with the hand-made article. In a great shoe factory there are seven or eight departments, such as: upper cutting department, sole leather, lasting room, welt room, bottoming, sewing and fitting, and order and shipping departments. There are some one hundred and fifteen different operations involved in the cutting out and assembling of a shoe, and for each of these operations there are operatives who become expert. Related to the shoe industry is the tanning industry, where the sole leather and welt leather is prepared from the raw hides, and dyed with great care.

The workers in a shoe plant include men, boys, women, and girls. Most of the operations are performed by means of machines. Some of the workers must be highly skilled, while others need to have little or no skill. The heavy jobs are given to the men, while the women and girls are employed mostly on power machines in doing the necessary sewing. The shoe industry has two busy seasons during the year. One of these seasons runs from February to June, and the other from the middle of July to the middle of December. During the slack season the factories work on short time, or close down. Work in a shoe factory is not particularly dangerous. The machines are protected by guards, so that a little caution on the part of the worker enables him to do his work without serious risk.

The wood-working and furniture industries. Much of the work connected with building a house, which used to be performed by hand, is now done in factories. Window sashes, doors, mopboards, picture molding, cupboards, and cabinets are made in the sash-and-door, or other wood-working or planing factories, and later installed in the houses or office buildings by the contractors. Some of these factories devote all their attention to doors and window sashes, others get out flooring exclusively, and others specialize on moldings, stair rails, and so forth. These factories are equipped with all sorts of wood-working machinery. They secure the rough lumber in the forms and sizes best adapted to their purpose, and work it up into the finished product in which their factory specializes. There is usually considerable dust in such factories from the sawing and planing, unless dust carriers are installed. There is also danger connected with handling the power saws and other machines, but such dangers can be reduced to a minimum by proper safety devices.

Where there is a great deal of lumber manufacturing there is also a considerable amount of furniture made. This is especially true where there is a supply of hardwood, such as oak, ash, maple, and mahogany available. In the making of furniture there is often a combination of a wood-working and a metal-working vocation. Beds and many other articles of furniture are now made of metal, while chairs, couches, and tables are generally of wood. In office furniture, filing cases are about equally divided between wood and metal, while desks and chairs are of wood. A considerable amount of furniture is also made of reeds or willow withes, and called wicker furniture. There are also great furniture factories making school furniture, such as desks, tablet arm chairs, tables, laboratory, library, and other equipment.

The iron and steel industries. There are more people engaged in industries where iron and steel and other metals are the raw materials of manufacture than in any other lines. Perhaps that is why this has been called the "Machine Age."

It requires all sorts of wonderful machines to work iron, steel, and other metals into the shapes required for agricultural implements, automobile parts, railroad cars, metal boats, and thousands of other articles.

Automobile factories. In the United States and Canada, during 1925, there were about 4,500,000 motor vehicles manufactured, and a total of 20,000,000 in use.[1] There were 225,000 workers employed in these factories, and the total value of their output was nearly $3,500,000,000. In 1904 there were 21,000 cars and trucks produced, having a total value of $31,000,000. A business that has increased in volume 215 times, and in value 113 times, in a little over twenty years, can hardly be called an infant industry. The manufacture of automobiles calls into coöperation a large number of other industries. One of the largest automobile manufacturing corporations owns and operates a railroad, a fleet of ships, and many airplanes to handle the transportation of the materials needed in its manufacturing processes. This same company also manufactures wire, cotton, and wool cloth for tops and upholstery, artificial leather, glass for wind-shields and enclosed cars, a steel plant, blast furnaces, and roller mills. It also owns and operates coal mines, iron mines, and lumber camps for the production of the raw materials used in its various plants.

There is no other industry in which the manufacturing processes have been so completely standardized by expert engineers. Conveyors which carry the materials and the parts from place to place within the factory enable the men to stand still at their work. These conveyors are carefully timed, and they govern the rate of production. This timing of production has been made possible by a study of each operation to make sure that time is not wasted by having the conveyors move too slowly, and on the other hand, that the men are not crowded beyond the point of efficiency by having the conveyors move too fast. Workers and machinery are arranged so that there

[1] From April, 1926, to January, 1929, 9,370,268 automobiles were made in the United States.

may be a change from one operation to the next without extra handling or delay. Speed and efficiency are constantly developed by means of machinery especially designed to make the various parts of the car in the best possible manner. The result is that every year better cars are being produced at lower prices.

Work in factories, designed to reduce each operation to its simplest terms, is likely to be extremely monotonous. The working hours, however, are not long — usually eight hours per day, with a five-and-a-half-day week. Clubrooms and recreation centers give the workers an opportunity to develop other interests, and exercise other abilities than those required in their factory work, and thus help them to live normal lives. Factory owners and managers have found that workers who are happy and contented in the time outside of working hours, are more likely to be productive workers during the time they are working in the factory.

Iron and steel plants. The production of pressed steel for ship plates, of rails for railroads, and of all sorts of iron and steel for the manufacture of the thousands of different kinds of machines used in American industries requires several hundred thousand workers. Such plants are most frequently located near great fuel supplies, either of coal, crude oil, or electric power.

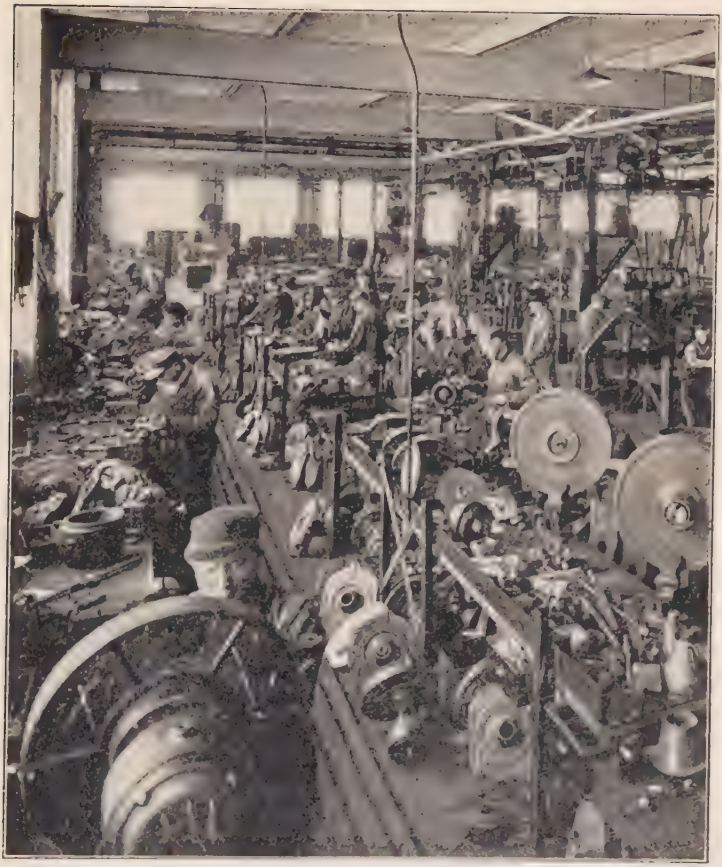
Iron ore, scrap iron, or steel and iron fragments are melted in what are known as open-hearth furnaces, and molded in the form of ingots weighing from a few hundred to over one thousand pounds each. These ingots may then be treated in the steel rolling mills, and made over into steel bars or sheets of steel of any length or thickness desired. In these steel mills are great cranes for handling the heavy steel products, lifting them from freight cars, and swinging them to the place desired for further treatment. There are also punch presses — great dies, weighing as much as twenty tons; and giant presses which stamp out steel parts according to the nature of the special products of that particular steel plant.

Work in blast furnaces and rolling mills is dangerous. Hot metal and heavy objects, if carelessly handled, cause serious

accidents. Hours are longer and pay not so good as in the automobile industry, except for the most expert types of work. While labor-saving machinery handles most of the very heavy objects, there is much heavy work yet to be done by hand; heat is often intense, and noxious gases endanger health unless they are carefully guarded against. The steel industry was the last of the great industries to give up the twelve-hour day. The introduction of the eight-hour day and the six-day week has greatly improved conditions for workers in iron and steel industries.

Shipbuilding and boatbuilding. During the World War, shipbuilding and boatbuilding became a major industry on account of the vast number of ships which were destroyed by the warring nations. The matter was overdone, so far as replacement was concerned, and for several years after the War many hastily constructed ships were tied up in the harbors or sold for junk. Recently, however, shipbuilding has returned to normal, and now is holding its own among the great iron and steel industries. A few wooden sailing vessels and river steamboats are being constructed, but the great majority of new ships are of steel. Shipbuilding is carried on at ocean seaports, or ports on the Great Lakes. In 1926, American shipyards had contracts for the building of 186 steel vessels and barges, having a total tonnage of 236,000 tons. The great bulk of our domestic tonnage finds employment in territorial waters, rather than in ocean trade, but several of the ships recently completed in American shipyards, such as the California, 18,000 tons, and the Malolo, 35,000 tons, were for the ocean-going passenger and freight trade.

A considerable part of the work of shipbuilding plants consists in keeping in repair the ships already in service. There are a number of great drydocks, where ships may be removed from the water and completely overhauled. American shipbuilding plants have apparatus and equipment for repair work second to none in the world, and attract ships from other countries for that type of service. The building of small boats for pleasure,



MACHINE SHOP WHERE PARTS FOR OIL BURNERS USED ON SHIPS AND IN BIG POWER PLANTS ARE MADE

and of lifeboats, rafts, lighters, and tenders contributes a great deal to the total volume of the boatbuilding activity.

2. *Opportunities, training, and income*

Numbers engaged in factory vocations. The accompanying table on page 134 shows the number of men and women engaged in factory vocations as shown by the Census of 1920.

FACTORY WORKERS

Occupations	Men	Women	Both
Chemical industries	103,066	21,564	124,630
Cigar and tobacco industries	82,557	97,822	180,379
Clay, glass and stone industries	192,484	17,494	209,978
Clothing (tailors, dressmakers, etc.)	164,397	336,945	501,342
Clothing (factories)	150,132	272,005	422,137
Cranemen, hoistmen, etc.	279,940	44	279,984
Firemen (boilers, furnaces, etc.)	143,862	13	143,875
Food manufacturing (millers, etc.)	23,265	7	23,272
Food industries (bakeries, etc.)	353,237	93,133	446,370
Harness, saddles, etc.	19,300	720	20,020
Iron and steel (automobile implement, car manufacturing, etc.)	1,349,183	70,410	1,419,593
Other metal industries	123,615	35,563	159,178
Wood-working and furniture	459,953	29,379	489,332
Pulp and paper mills	91,107	15,825	106,932
Shoe factories	147,007	78,428	225,435
Tanners, shoemakers, cobblers, etc.	133,900	4,665	138,565
Textile industries	505,311	471,466	976,777
Upholsterers	27,338	2,267	29,605
Other factory workers	836,654	249,899	1,086,553
Foremen and overseers	277,242	30,171	307,413
Managers and superintendents	196,771	4,950	201,721
Manufacturers and officials	223,289	8,326	231,615
Apprentices clothing trades	17	4,309	4,326
Total factory workers	5,883,627	1,845,405	7,729,032

Factory vocations occupy the time of about 8,000,000 gainful workers, or two thirds of the 12,000,000 engaged in the entire field of manufacturing and mechanical trades and industries. Three fourths of the factory workers are men, but there are some industries, such as the clothing industries and the tobacco industries, where there are more women factory workers than men. In the textile factories 47 per cent of the workers are women.

Training. For the factory vocations practically no previous training is required. The operations, except in the case of certain special classes of workers, are simple routine, oft-repeated. A person with the necessary strength and manipulative ability can master the ordinary factory type of job in a few days, or a few weeks at the outside. The only factory vocations having any considerable number of apprentices are the clothing trades, such as tailoring, dressmaking, and millinery. As previously stated, these are really skilled trades, but they are grouped with factory vocations because so much of the clothing worn in this country is made by factory methods and not by the tailors, dressmakers, and milliners, who require apprenticeship training for beginners. Many factories maintain schools where the simple operations are taught to prospective employees, with common-school subjects to supplement their limited school training. This schooling is given to save the time of regular employees, and the wear and tear on machinery caused by unskilled handling.

Foremen, managers, and superintendents of factories usually come up through the ranks. Workers of superior ability, industry, and executive ability are promoted through the grades of overseer, foreman, manager, and division superintendent. Men in these positions must know the work from actual experience, and must be able to teach and handle other employees successfully.

Compensation. In the factory vocations the pay varies with the industry, the demand for workers, and the condition of the market. A study of average wages paid in 1923 showed the

following figures for all manufacturing industries, and for seven of these industries, taken by themselves:

Type of Factory	Average Annual Wages
All manufacturing industries, of factory type	$1264.00
Manufacturing transportation equipment	1590.00
Iron and steel industries	1485.00
Manufacturing machinery	1382.00
Chemical industries	1335.00
Food industries	1170.00
Textile industries	1017.00
Tobacco manufacturing industries	825.00

Taking all industries together, the average wage is a little over $100 per month. The best paid employees in factories are those who work for manufacturers of transportation equipment, such as automobiles, airplanes, locomotives, railway cars, ships, etc. The poorest paid factory workers are those who work in cigar, cigarette, and other tobacco factories. Those who make transportation equipment earn an average of $132.50 per month, while the tobacco factory workers receive only an average of $68.75 per month.

Working conditions. In the factory type of industries working conditions are somewhat less favorable in the poorly paid industries. In the highly paid industries the workers demand and receive better working conditions. In most States also, there are factory inspectors who try to eliminate conditions which endanger life, limb, and health. This supervision means that the lot of all factory workers is greatly improved over what it was twenty-five and fifty years ago. In considering a vocation in the manufacturing field, however, it is a good plan to investigate how employers treat their workers, and whether with a living wage there is also a clean, well-lighted, and sanitary factory building in which to work.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Does the invention of a machine which will do the work which formerly required one hundred men mean that there will be one hundred idle men in that factory town?

2. Make lists of the industries in your community, and see if you can pick out those which are factories, that is, do their work under factory conditions.
3. How many people would be thrown out of work if all women refused to use cosmetics for a single year?
4. How are patterns or figures worked into cloth as it is being woven? How does the factory process differ from the way your great-great-grandmother did her weaving?
5. Find a cobbler, or shoe-repair man, and ask him if he now makes shoes. If he does, ask him how long it took him to learn the shoemaking trade.
6. Who wrote "The Song of the Shirt"? What conditions in the clothing industry of that day was he trying to portray?
7. Is a meat-packing plant a factory? Is a place where fish, tomatoes, or string beans are canned, a factory?
8. In a slack season, why do the poorer paid workers lose their positions first? Wouldn't the employer make more money if he let the best-paid employees go and kept the ones who earn the smallest wages?
9. Why do we find so few apprentices in the factory type of industries?
10. What has Henry Ford done for the workers in his factories?

SELECTED REFERENCES

1. Allen, F. J.: *The Shoe Industry.*
2. Bardorf, C. F.: *The Story of Sugar.*
3. Collins, J. H.: *The Story of Canned Foods.*
4. Crabtree, J. H.: *The Cotton Industry.*
5. Filene, Catherine: *Careers for Women*, 255–60.
6. Gowin, Wheatley, and Brewer: *Occupations*, 150–67.
7. Hoerle, H. C., and Saltzberg, F. B.: *The Girl and the Job*, 88–91; 221–24.
8. Jacoutat, A.: *The Manufacture of Confectionery.*
9. Mears, James R.: *The Iron Boys in the Steel Mills.* The Boys of Steel Series.
10. Milwaukee Vocational School Series: *My Life Work.* Monographs on: "The Shoe Industry"; "The Candy Industry"; "The Baking Industry"; and "The Hosiery Industry."
11. Platt and Farnham: *The Book of Opportunities*, 37–122.

CHAPTER X

METAL WORKING AND PRINTING TRADES

I. THE METAL TRADES

1. *Nature of the work*

MAN'S ability to work with various metals in fashioning tools, weapons, and agricultural implements has been one of the great factors in his progress in civilization. The factory stage of industry, which was described in the last chapter, and which employs two thirds of those who work with mechanical devices, did not develop until within the past two hundred years. Up to that time workers in wood and metals were organized in guilds, and learned their crafts as apprentices. Now these trades, when organized, are called unions, and apprenticeship is not as prevalent as it used to be. Only a few of these trades can be described. Many others, however, should be studied by individual students and reports on them made to the class.

The blacksmith. It is not possible to say just which of the hand trades man first developed, but it is quite certain that blacksmithing was one of the very first. The man who could take the metal as it came from some crude melting furnace, and could heat and pound it into various shapes for making of swords, spears, pruning hooks, and plowshares, was a very important man in his tribe. The village blacksmith of whom Longfellow sang has given way to the automobile mechanic, but in every machine shop of any importance there is need of one or more blacksmiths. He must know about the various kinds of steel and their uses. He must know how to temper or harden all sorts of cutting tools for the work which they must perform. He must have the strength to work with heavy hammers. He must have a trained eye because he must work largely from models and with approximate measurements, depending upon his own sense of proportion for the results.

Men who take an interest in working with metal, and who have the strength and the skill to do the required kinds of work well, find the work of the blacksmith interesting and attractive.

THE FOUNDRY

The foundryman. A trade which is often thought of in connection with blacksmithing is that of the foundryman. There is really very little similarity, because the blacksmith heats his metal to a point where he can pound it into shape, while the foundryman melts the metal and pours it into molds. When it cools it has taken the shape of the mold. Foundrymen work in any metal that can be melted. Sometimes the pieces to be cast are very large; so large, in fact, that the molds are made in parts and fitted together. Cranes and other devices are employed for lifting about the larger parts, but at best the foundryman's work is heavy. He is lifting and tamping [1] and hurrying all day because the molten metal must be handled just when it is right for pouring, and everything must be perfectly ready to receive it. There is much heat, dust, and dirt con-

[1] Tamping is the process of packing the molding sand tightly around the forms with a tamping tool.

nected with the foundryman's work, and one needs to be strong and vigorous to undertake it.

The boilermaker. The boilermaker is a very important worker. The containers in which steam is generated for the power to run industrial plants, heat buildings, and propel engines are made by him. Careless work on his part means a defective boiler, and a defective boiler might mean an explosion and loss of life in a factory or office building. Boilers are usually made of steel plate, and the boilermaker must use bending rolls, punches, cutting machines, riveting machines, pneumatic hammers, and the like. Like that of the foundryman and the blacksmith, the work of the boilermaker is very heavy. He works with steel plates, in the midst of a great deal of noise, and considerable heat. The lifting is done for the worker by electric traveling cranes, but great skill is required in handling the hot rivets and the riveting machines. A strong body and good nerves to withstand the deafening noises of the boiler factory are essential qualifications.

The welder. Welding is a method of joining pieces of metal together by heating and melting them. Fusing is another name for joining two pieces of metal by melting them together. This process has taken the place of riveting in the construction of many kinds of machines. Welders are employed in foundries, automobile plants, railroad-car building and repair shops, and in machinery-making plants of all kinds. Welding is accomplished by the electric process, where the parts are heated by an electric current until they are fused or melted together, or by the oxyacetylene process, where the welder uses a torch which burns acetylene gas combined with oxygen. Oxyacetylene torches are used also for cutting steel rails in two, or for cutting up scrap metal. Welders need to be careful in protecting their eyes by the use of colored glasses, as the flame of the torch is very intense. Welding is constantly being adapted to new purposes, hence it is a vocation in which there is an increasing demand for workers.

The machinist. There are four types of machinist em-

ployed in manufacturing plants. They are the machine hand, the all-around machinist, the assembler or machine erector, and the tool-and-die maker. The *machine hand* is familiar with only one kind of machine, and is one who requires a minimum of training for the work which he does. The *all-around machinist* is a highly skilled workman who knows how to handle and operate all types of machine and hand tools in a machine shop, and who is capable of becoming the foreman of the shop, in course of time. The *assembler* is also a highly skilled mechanic who has had general machine training. He is a specialist in the setting-up or assembling of a machine in the shop where it is made, or in the plant where it is to be permanently located. The work of the *tool-and-die maker* consists of making jigs, fixtures, special tools, and stamping devices. The toolmaker works almost entirely with steel. Part of his work consists in tempering, or treating the steel with heat so that it will be very hard, and therefore capable of withstanding the wear to which it is subjected when the cutting is being done. In toolmaking one worker usually performs every operation, and uses every type of machine necessary to perfect a given device. This means that he must be an all-round skilled mechanical worker.

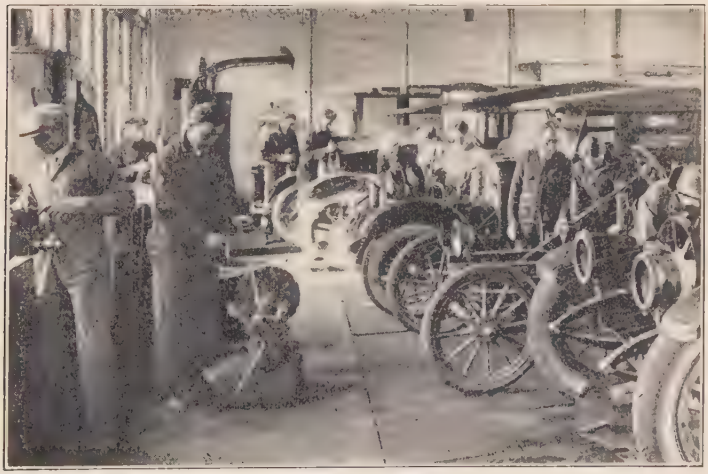
The machine tools operated by the machinist are lathes, planers, shapers, milling machines, and drilling machines. Other machines found in the machine shops are turret lathes, automatic screw machines, and boring mills. The future of the machinist seems assured because of the constant development of new types of mechanical devices and machines in industry. Good intelligence, manipulative ability, interest in mechanics, accuracy, and a willingness to work hard are necessary qualifications.

The sheet-metal worker. The uses to which thin metal can be put has caused the expansion of many old industries and the creation of a number of new ones. The phenomenal growth of the automobile industry has been partly due to the use of thin metal in construction. Construction costs were

reduced and the automobile was made lighter and more durable by the use of thin sheet metal. Fire hazard in building construction has been reduced by the use of metal shingles, metal lath, and other sheet metals in the place of wood. The sheet-metal worker uses both hand and machine tools. The hand tools consist of rivet set, cold chisel, hollow punch, solid shears, and hand groover. The machine tools which he uses are employed in the processes of folding, forming, cutting, crimping, turning, grooving, and wiring the sheet metal. The sheet-metal worker must know how to read and follow the blueprint, or working drawing, before he can begin his task. The materials used are either copper, zinc, tin, galvanized iron, or common black iron in thin sheets. The sheets are cut, formed, stamped, or punched into the desired shapes, and are then either riveted, welded, or wired together. Although machinery is extensively used in the production of sheet-metal articles, the work is not considered dangerous, because the machines are usually well protected. If the sheet-metal worker is skilled at his trade he can find employment in many different types of industries, such as automobile factories, sheet-metal stove factories, furnace and heating apparatus concerns, kitchenware firms, school and office furniture factories, and many others. There is a growing demand for capable sheet-metal workers.

The automobile trades. In the chapter on factory workers it was shown that many hundreds of thousands of workers are engaged in making automobiles. There are other thousands at work in automobile garages and repair shops at such tasks as automobile mechanic, automobile electrician, automobile painter, automobile body-builder, and so forth. *The automobile mechanic* in a general garage must be familiar with many different kinds of cars and know how to make necessary repairs, discover the trouble quickly, and apply the remedy. *The automobile electrician* must know all about the lighting system, and all other electric connections with starters, generators, and batteries. *Automobile painters* and *body-builders* usually

work in the same shop or department of the complete or fully-equipped garage. In such an establishment there is usually a service salesman, or "trouble shooter," as he is called, who examines your car when you bring it in. He discovers what is the matter with it, and sends it to the proper department for "service" or attention. In the repair shop, if it is a large one, there are workmen who are specialists in their line. One will work on rear axles only; another gives all of his attention to the engine; another is a specialist in carburetor adjustment; still another gives all his attention to the oil or lubrication system of the car; and the automobile electrician takes care of all battery, ignition, and lighting-system troubles.



THE AUTOMOBILE SHOP

The materials used in repair and adjustment work consist of iron, brass, and copper rivets, brake linings, valve-grinding compounds, capscrews, bolts of various kinds, and automobile parts. The automobile mechanic uses a great variety of tools. Among these, in addition to the ordinary hammers, pliers, cold chisels, wrenches, calipers, and micrometers, may be mentioned the wheel pullers, gear pullers, valve-grinding

and refacing tools, reamers, and wheel aligners. The workers in the automobile trades come in contact with grease, paint, oil, varnish, and all kinds of dirt in the course of a day's work. Washrooms, however, are provided where there are special soaps for removing this variety of dirt, and where the worker may dress in street clothes before going home. Work is not as seasonal as it used to be. Efforts made in every part of the country to keep roads open all winter insure work the year around for the workers in the automobile trades.

The draftsman. All machines and mechanical devices of any size are built according to plans, which must be drawn before the work of making the machine is begun. The work of making these plans or designs is performed by persons called designers, or draftsmen. The tools of the draftsman's trade are drawing instruments, rulers, handbooks, pens, ink, and drawing pencils. He works on ordinary drawing paper, and on cloth or paper from which blue-prints can be made. The draftsman prepares drawings in detail for every part of the machine that is to be constructed. The drawings must be very accurate and clear, because the workmen are to be guided by them in producing the finished article. In and around the shops the draftsman's work is called a "white-collar" job, because the drafting room is usually well lighted and ventilated and kept clean. It is, however, a confining sort of work, since a draftsman must remain at his drawing board all day and concentrate upon fine lines and minute details of his drawings. The demand for draftsmen has kept pace with the growth of the machine and metal-working trades. The draftsman is usually at work when many other workmen are idle, and in the busy season he is rushed to keep up with the demand for drawings and blue-prints of new machines and metal parts. Other phases of draftsmanship are taken up under the discussion of the work of the architectural draftsman in Chapter XVII.

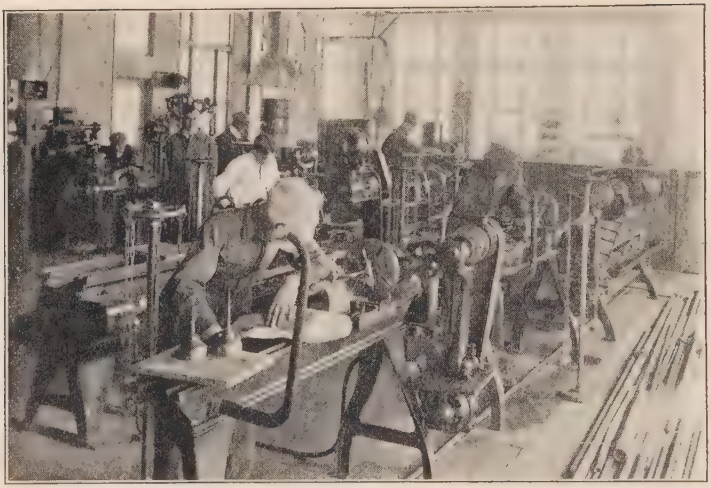
2. *Training, opportunities, and income in metal and machine trades*

Numbers engaged. There are over two million workers in the metal and machine trades, as is shown in the following tabulation:

Occupations	Men	Women	Both
Blacksmiths	221,416	5	221,421
Boilermakers	74,088	0	74,088
Coopers	19,061	5	19,066
Filers, grinders, polishers	57,315	2,470	59,785
Furnacemen, smelter men, etc.	40,800	6	40,806
Glassblowers	9,055	89	9,144
Goldsmiths, silversmiths, jewelers, etc.	37,914	1,678	39,592
Machinists, millwrights, tool-makers	894,654	8	894,662
Mechanics	281,690	51	281,741
Molders, casters, founders	123,668	13	123,681
Pattern-makers	27,663	57	27,720
Rollers and roll hands	25,061	0	25,061
Sawyers	33,800	9	33,809
Oilers of machinery	24,568	44	24,612
Unclassified metal workers	19,326	69	19,395
Tinsmiths and coppersmiths	74,957	11	74,968
Metal trade apprentices	66,539	2,504	69,043
Totals	2,031,575	7,019	2,038,594

Among the machine and metal trades the only vocations where women are employed in sufficient number to be at all significant, are those classified under filers, polishers and grinders, and also as workers in goldsmiths', silversmiths', and jewelers' shops. The 2504 women listed as apprentices in the metal and machine trades are looking forward primarily to work in the fields just mentioned. The metal and mechanical trades may be said to be almost exclusively men's vocations.

Preparation. Preparation for these vocations is usually by apprenticeship. This means that a boy is able to learn a trade by actually working in a regular shop under the supervision of experienced mechanics. The period of training is from two to four years, depending somewhat upon the particular trade and upon the shop in which one is working. Apprentices usually begin their work at sixteen; for two years they attend continua-



THE MACHINE SHOP

tion school where they learn the technical aspects of their chosen trade, and receive instruction in social studies, shop mathematics, mechanical drawing, and other subjects related to industrial training. A mechanic's or metal worker's apprentice should have at least an eighth-grade education, and in some of the vocations, such as that of draftsman, a high-school education or a year or two of college is an added advantage. The fact that there are nearly seventy thousand apprentices in the metal and mechanical vocations is an indication that the work is attractive to a great many boys and young men. Full-time study in a trade school will reduce the time necessary to be spent as an apprentice, anywhere from one to three years.

Income. A statement of present earnings of men in various mechanical trades is not very reliable, since such wages differ in different sections of the country, for different industries, and for different types of service in the same industry. Since 1915 the wages of machinists and metal workers have seldom been lower than $5 per day, and some of the more skilled workers receive as high as $10 and $12 per day. A rather prevailing wage for skilled machinists is $8 per day.

General qualifications. The machinist or metal worker should be able-bodied, in good health, deft with his hands, active, and alert. He must have mechanical or manipulative ability, a liking for machinery, and be capable of understanding quickly how various mechanical devices work. He must have the capacity to take pains and pay attention carefully to minute details, since accuracy and the ability to turn out perfect work is constantly demanded.

Working conditions. The work involves contact with grease and dirt, hence the machine trades are not classified as "white-collar" jobs. The work, however, is interesting, pays much better wages than does the average clerical position, and involves the satisfaction of handling power machinery in making things. There is also the opportunity for the best workers to receive promotion to foremanships and superintendencies, where the responsibilities bring increased pay and wider range of service. Shops, being under factory inspection, usually are well lighted, and dangerous machinery is protected with safety devices prescribed by law. Increased demand for machinery of all kinds for use in industry has given skilled machinists steady employment, over a considerable period of years. Restricted immigration has kept out skilled machinists and metal workers from other lands, therefore the demand for American trained workers has been on the increase, and with continued prosperity should be good for some time to come.

II. THE PRINTING AND BINDING TRADES

1. *Nature of the work*

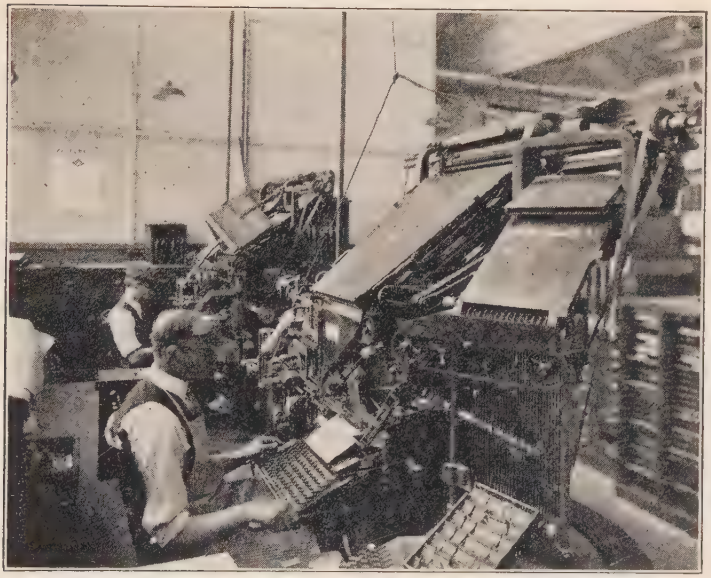
The art of printing was first practiced by the Chinese, who cut all the characters for a page on a block of wood and then applied the inked block to paper. Movable type was first used in Europe, some claim by Johannes Gutenberg, in Germany; others claim the credit for Laurens Coster, of Holland. This invention made the printing of books much easier, and was responsible for the rapid spread of learning from that time on. When books had to be written by hand on sheepskin parch-

ment, or carved in clay tablets, it was not easy to circulate them for general reading, but when thousands of copies could be printed from one form set up with movable type it became possible for poor as well as rich to own books. At first letters were carved on small blocks of wood by hand, but later they were cast in metal. This made possible the molding of small metal type, which could be set up for the printing of an article or a book, and then redistributed for use again and again until it was worn out. A few of the positions open in the printing trades will be briefly described.

The compositor or typesetter. *The hand compositor.* All type was formerly set by hand, but now most of it is set by machines. The hand compositor sets display lines, and performs other operations which cannot be done on the machines. Many small advertisements, which require a particular arrangement of type, are still set by hand.

Machine composition. There are two principal types of machines for typesetting in general use to-day — the linotype and the monotype. The essential difference between the two machines is that the linotype produces a complete line, while the monotype makes, as the name shows, single type letters or characters. Both machines are used extensively by newspapers and in book-making, as well as in smaller job work — miscellaneous printing, such as catalogues, circulars, and so on.

The linotype. This machine has a keyboard similar to that of a typewriter. As each key is pressed by the operator, a piece of metal, called a matrix, is released from a magazine at the top of the machine. This matrix runs down a slot and automatically falls into place in the line. In each matrix is punched the character or letter required. When the line is full, it is automatically carried under the mold in which is contained the molten type metal. This metal is poured from the mold and forms a slug, at the top of which appear the characters to be printed, raised from the solid slug of metal as is the single letter or character in separate types used in monotype composition. These slugs are assembled, by appren-



LINOTYPE MACHINES AND OPERATORS IN PRINTING ESTABLISHMENT

tices usually, in long trays called galleys. Proofs of these galleys are taken on a small press, and passed to proof-readers. These proofs, called galley proofs, after being read and marked with corrections, are returned to the machines for correction. The corrected slugs are then passed to the make-up man.

The monotype. This machine also is operated by a keyboard. The operator touches the key corresponding to the letter desired, and a sheet of paper in a roll on a spool is perforated. These perforations are made in a line on the sheet until the desired number of lines are set to make a full galley. Then the spools are attached to a second machine, called a caster, and by ingenious devices separate type letters and spaces are cast in lines and arranged in consecutive rows on a galley. The remaining processes are then the same as those described for the linotype.

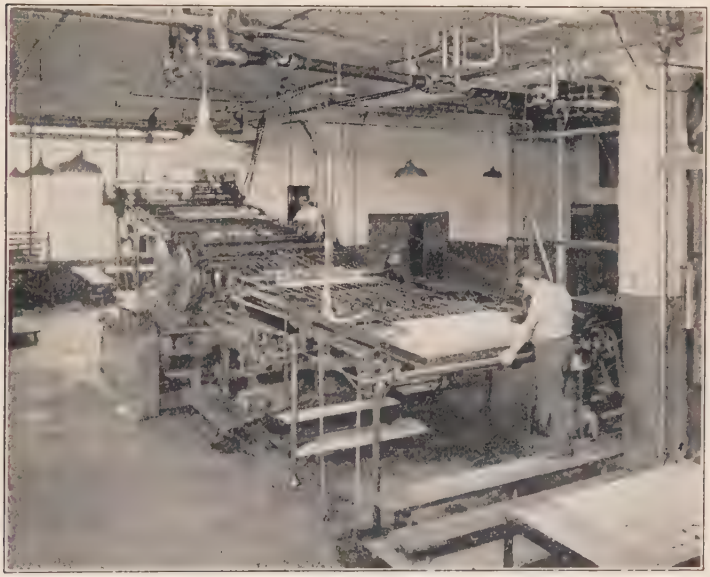
The make-up man. The work of the make-up man is to assemble the slugs from the linotype, or the type from the monotype machine, in pages of proper length, adding a heading at the top of each page, with a page number, called a folio. These pages are then placed, with proper spaces between pages, in an iron frame called a chase, and locked up. It is then designated as a form. If the pages are to be printed from type, the form is sent direct to the pressman. If plates are to be made, the form is sent to the electrotyper or stereotyper.

Stereotype and electrotype plates. (1) If a stereotype plate is to be made, a series of papier-maché sheets, dampened, are beaten into the raised letters of the type or slugs, from which a matrix is made, usually of several pages at once. Then this matrix is put into a casting box into which molten type metal is poured and a solid plate thus made. (2) If an electrotype plate is wanted, the mold is made by placing the forms of type or slugs on a prepared sheet of wax. Then the type is pressed into the wax by a machine exerting heavy pressure. The resulting mold has the type characters sunk deep into the surface. This mold is then hung on rods in a vat and by an electric process a copper deposit is made forming a copper shell on which the page of type characters stand out. The shells are then backed up with type metal, and finished by a workman, called a finisher, and are ready for printing.

The pressman. The pressroom is a necessary part of any complete printing plant. The pressman receives the work that has been prepared in the composing and electrotyping or stereotyping rooms, places it on the presses, and produces the printed matter. The jobs of the workers in the pressroom differ with the types of machines which they are called upon to operate. There are specialists in handling platen-press operations, while others handle those of the cylinder press.

The platen-pressman puts the form on the bed of the press, which is vertical, and then locks it in place. He puts packing on the platen to give a yielding surface for printing. He then

puts guide-marks on the packing to enable him to put the sheet to be printed in the right position. After everything is made ready, and some test sheets have been printed, he applies the power and the printing process begins. The platen press is mostly used for small job work in which the sheets to be printed are not large.



TWO-COLOR PRESS IN LARGE PRINTING ESTABLISHMENT

The cylinder press. The pressman prepares for printing by adjusting the rollers, which are to distribute and ink the forms, sets the gauges for releasing the ink from the ink container called a fountain. He then places on the bed, which is horizontal, the form. A spot sheet, so called, is printed, which shows the pressman the light and heavy spots, which he has to adjust by what are called overlays and underlays. The whole process, which is done to make the printing of the

whole sheet uniform in appearance, is called making ready. It is the most important part of a pressman's work, coupled with the care of his machine. The printing is then ready to go on. Sheets are fed to guides or markers to keep the margins of the printed sheets uniform. Women are largely employed as press feeders; on long runs automatic feeders are used.

The web-pressman. The rotary press used in a newspaper office has several cylinders, one kind of which carries the form, which is made up of curved plates, and the other kind carries the packing. A newspaper rotary press is composed of a number of units, each of which prints one part of the edition. Some of the largest presses have as many as twenty units, and are so connected that they can print a newspaper with as many as sixty-four pages in one process. The duties of the pressman on the web-press consist in removing the plates used in previous runs, washing the rollers, and cleaning all parts of the press. He gets the rolls of paper ready for the printing process, and leads the web back through the various rollers. The plates are then put in position and locked, and the press is started. The apprentices, or flyboys, assist in all of these operations. When automatic conveyors are not attached, the flyboys take the printed papers away from the press.

The binderyman. The third stage in the process of printing books and magazines is that of binding. The binderyman folds, assembles, and prepares the pages for the final stages before distribution. It is his business to make the book, magazine, or pamphlet as attractive and pleasing in appearance as possible. In this department women and girls are more largely employed than in any other. Among the operations performed by the binderyman a few may be mentioned:

Folding, is either a hand or a machine process. The folding machines are operated by men. The hand folding is most frequently done by women. Folded signatures, after being examined to be sure that they are correct, are tied up by machines, operated by men.

Gathering of the signatures, or bundles of folded sheets, is another operation usually performed by women. The bundles are placed on a table-top which turns. The gatherers are seated about this table, and pick up the signatures as the top moves around. This operation is also performed by machines, operated by men.

Collating consists in examining the gathered sections to see that they are in the right places.

Stitching. When properly assembled the sections are stitched, sometimes by hand, but mostly by machines, operated by women.

Smashing is the process of compressing and flattening the books to make them compact, after which the books are trimmed. Sometimes, after trimming, the edges, or top only, are gilded or colored.

Rounding and *backing* are the operations which prepare the books for the covers, and are done by machines, operated by men.

Lining consists in gluing the shelf back, putting on a piece of muslin, which is also glued, and placing over all a paper covering. This operation is done by men, by hand or by machine. This completes the process of binding the book, except putting on the cover.

Covers are made by men, either by hand or by machine, and are finished either with ink or gold stamping, which is done by machines, with men operators. The book is then pasted and put into the cover. This is done by men, either operating a machine or by hand. The book is afterward placed in a press, where it is left to dry about twelve hours. It is then inspected, covered with a slip cover called a jacket. This work is done by women.

Lithographers and engravers. A very important part of book and newspaper making is the illustration work done by lithographers, electrotypers, and engravers. *Lithography* is the art of putting writing or designs of various kinds on stone, zinc, or aluminum, and of printing these designs on paper. In

copper-plate *engraving* a sheet of copper, one sixteenth of an inch thick and highly polished with wax on the side to be engraved, is used. The engraver then executes the desired letters or design with a steel-pointed instrument or graver. *Half-tones* on zinc and copper plates, and zinc *line-etchings* are produced by the photo-engraving process. This consists in reproducing on metal plates any photograph or drawing, painting, or other object by means of the camera. Some large newspaper offices have their own lithographing, engraving, and electrotyping plants. This is an outgrowth of the demand for books and newspapers which are well illustrated.

2. *Opportunities, training, and income*

Numbers engaged. The numbers engaged, both men and women, in the various vocations connected with the printing trades are shown in the following table:

Occupations	Men	Women	Both
Compositors and linotypers	128,859	11,306	140,165
Electrotypers, lithographers, etc.	13,530	186	13,716
Engravers	14,492	561	15,053
Pressmen, and plate printers	18,683	0	18,683
Printing and publishing	48,167	43,672	91,839
Printers' apprentices	10,366	1,237	11,603
Totals	234,097	56,962	291,059

Among compositors and linotypers there are eleven men to every woman, but in the binding division, where the assembling, stitching, and other parts of the binding process are carried on, women are almost as numerous as men. In all of the printing trades combined about twenty-five per cent of the workers are women.

Distribution. The printing trades are well distributed over the entire country, as every village has its local paper and printing shop where job printing is done. This is illustrated by the fact that there are 2300 daily newspapers and 13,000 weekly newspapers in this country, as well as 20,450 job and

other printing establishments. The best opportunities open to bookbinders, lithographers, and engravers are to be found in the larger cities as the largest publishing houses are usually located there. For the job printers and hand compositors the best openings will probably be found in smaller-town newspaper and job printing shops.

Income. Hand compositors receive from $4 to $6 per day. Linotype men receive from $5 to $8 per day. Wages of women workers in the bindery are from $15 to $35 per week. The average income of all wage-earners in the printing trades, in 1923, was estimated at $1625 per year, and of salaried persons, foremen, proof-readers, editors, managers, etc., the estimate was $2200 per year.

Training. Training for the printing trades is obtained on an apprenticeship basis. Reference to the numbers engaged shows that there were 11,603 apprentices in these trades, in 1920, 1237 of whom were girls. High-school graduation is usually required for apprentices to learn hand composition or linotyping. Not many are, therefore, taken as apprentices to learn these trades before they reach eighteen years of age. For bookbinding and presswork, age sixteen and completion of the eighth grade are the customary requirements. Many high schools and junior high schools now have printing plants in which it is possible to try out one's abilities and interests along these lines, and also to secure training that will reduce the time required for apprenticeship. Apprentices receive from $12.50 to $15 per week.

Working conditions. The modern printing shop and electrotyping rooms are usually well lighted, equipped with safety devices, and provided with conveniences for the comfort of the workmen. Health hazards, except for eye-strain and nervous tension, due to confining work, are not great. Practical experience, good foundational education, and technical training are the lines which lead to steady employment and promotion.

SEEK-FURTHER QUESTIONS AND SUGGESTIONS

1. How does the work of the tool-and-die-maker differ from that of the all-round machinist? What different tools are used by each?
2. Make a list of the different places where steam boilers are used. What processes of such work would you like to perform? What processes would not appeal to you? Why?
3. Did you ever see a man working on street-car tracks with a welder's outfit? What kind of welding does the car-track worker employ?
4. In what vocations are blue-prints or designs necessary as guides to the workers?
5. Is a lifeboat made of metal better than one made of wood? Why?
6. Are there more sheet-metal workers in the United States now than were listed in the 1920 Census? If you think the number is increasing more rapidly than the general population, how do you account for the fact?
7. Find the largest and best-equipped service garage in your town or community, and observe the number of different types of work which are carried on there. Make a list of them, and describe the principal ones in detail.
8. Describe the process by which the cartoonist's drawing is reproduced in the paper.
9. If there is a newspaper in your town, arrange to go through the job printing, and the composition rooms, and watch the linotypers and hand compositors at work. Make notes, and report to the class what you discover.
10. Why is it that more women are found in the bindery than in the composition room or the press room?
11. In what industries are glassblowers employed? Describe the operations of the vocation.
12. Is it necessary for the goldsmith, silversmith, or jeweler to know anything about design?

SELECTED REFERENCES

1. Adams, Henry C.: *Description of Industry.*
2. Federal Board for Vocational Education: "The Metal Trades"; in *Vocational Education Series*, no. 7.
3. Hague, C. W.: *Printing Occupations.*

4. Levitas, A.: *Printing and Typography for Beginners.*
5. Milwaukee Vocational School Series: *My Life Work.* Monographs in the Printing Trade Series on: (1) "The Composing Room"; (2) "The Pressroom"; (3) "The Bindery"; (4) "Lithographic Printing"; (5) "Engraving"; and in the Metal Trade Series, on: (1) "The Molder and Coremaker"; (2) "The Patternmaker"; (3) "The Machinist"; (4) "The Tool-and-Die Maker"; (5) "The Draftsman"; (6) "The Sheet-Metal Worker"; (7) "The Forgeman"; (8) "The Welder"; (9) "The Boilermaker"; and a monograph entitled *The Automobile Trades.*
6. Platt and Farnham: *The Book of Opportunities,* 123–32.
7. Porte, R. T.: *Letters to a Printer's Devil.*
8. Rosengarten, Wm.: *Choosing Your Life-Work,* 204–09 (metal trades); 243–54 (printing trades).
9. Sietz, Don C.: *Training for the Newspaper Trade.*

CHAPTER XI

THE BUILDING TRADES

1. *Nature of the work*

THE Indian used to live in a tepee made of poles and the skins of animals. The Eskimo lives in an igloo made of snow. The South African savage lives in a hut made of small poles and vegetable fibers. Civilized man lives in houses with several rooms, made of wood, stone, brick, or concrete. He does his business or performs his labor in business buildings, or in factory buildings. In a growing community there is much building going on, and a great deal of work for men to do in the building trades. Some of these trades will be briefly described in this chapter.

The carpenter. The carpenter is the man who installs and fits into place the woodwork on buildings of any kind, whether they are homes, churches, schools, public buildings, theaters, hospitals, office buildings, manufacturing plants, or garages. It is his business to do all the framing necessary. If the building is of wood he begins where the bricklayer or concrete man, who lays the foundation, leaves off. He lays the joists of the floor, cuts and erects studding for the walls, puts up the rafters for the roof, and nails on the wall and roof boards. He leaves proper openings for the doors and windows, sets up the partitions, and installs door and window frames. He works directly from plans furnished by the architect, or drawn by himself. When the framework is up the plumber, the electrician, and the lather and plasterer do their work, and then the carpenter comes back and does the finishing work. He hangs the doors and windows, fits the locks and catches, lays the "finish" floor, and leaves everything for the final touches of the painter and decorator.

Carpenter work is a healthful occupation, since most of the work is out of doors. Comparatively clean material is handled,

and the work is not particularly dangerous if reasonable care is taken. The carpenter works almost entirely with hand tools of which he is the absolute master, and of which he must know the use.

THE WOODWORKING SHOP

The cabinetmaker. The work of the cabinetmaker requires about the same qualifications as that of the carpenter, with greater stress on accuracy and fine joining work. He makes furniture, cabinets, and built-in work of all kinds. He does all sorts of inlay work, and creates beautiful designs for individual pieces of furniture. His work is now done for the most part by machine processes, but there is still a place for a considerable number of skilled workers in wood to create works of art, and keep alive one of man's most satisfying crafts.

The bricklayer and stonemason. Brick, concrete blocks, tile, and cut stone are used in the construction of large buildings, schools, hospitals, and the better class of homes. The bricklayer, after first working the mortar into the right consistency, spreads it and lays the brick on it. He then cuts

away the mortar from the edge of the brick and levels and plumbs it. The brick must be on a perfectly horizontal as well as a perfectly vertical line. He works on the joints between the brick to make them smooth and to cause them to appear ornamental. Although bricklayers often work at great heights, their scaffolding is provided with railings and other safeguards, so that with proper care most of the danger is removed. As in the case of the carpenter, the work of the bricklayer, being out of doors, is a healthful occupation.

The stonemason works in much the same manner as the bricklayer, except that he must be very skillful in cutting his stone to make it fit the place where it should go. It is more difficult also to keep a proper alignment and make a wall that is both safe and ornamental.

The plumber and steamfitter. The development of modern plumbing devices and sanitary methods of disposing of waste has made it possible for people to live in large cities with safety. The plumber and steamfitter are therefore very important members of any community. In a city every house is required to have certain types of plumbing fixtures, and these are passed upon by sanitary inspectors before being accepted as satisfactory. The plumber lays water, sewer, and gas pipes from the street to the houses. He installs filters, meters, bathtubs, bowls, showers, sinks, tanks, and drains. Melted lead is used to hold joints together. The plumber measures, cuts, threads, and calks iron pipes, and he cuts and bends lead pipes.

The plumber's repair work is also important, and consists of taking care of frozen pipes, opening drains that have been stopped up, repairing leaks in sewage systems, water, and gas mains, and in repairing fixtures in bathrooms and kitchens. The plumber works in houses and buildings where the work consists of installing new fixtures and running lines of pipe to them. He also works in buildings where repairs to existing plumbing fixtures are needed. His trade takes him from place to place, and he is never employed in one building very long. There are some disagreeable features connected with the repair

work on old fixtures, and the work at all times involves grease and dirt, but it has very few dangerous aspects, if reasonable care is taken to avoid burns and infections.

The electrician. The electrician is the man who wires houses, offices, factories, and other buildings, and puts in all the electric fixtures, including lights, motors, and heating equipment. Electricity is employed in the home to operate vacuum cleaners, dishwashers, sewing machines, and many other household appliances. Machinery, elevators, and conveying devices in factories are run by electric current. In theaters the fans, curtains, and moving pictures are run, and the lighting effects are produced by electricity.

The work of the electrician is divided into two processes called roughing in and finishing. The *roughing in* is done after the studding and rafters are in place, but before the laths and plaster are applied. The work includes stringing wires and putting up and installing the conduits, and the drop and outlet boxes. The *finishing* comes after the plaster and finish lumber are on, and includes the installation of switchboards, individual switches, motors, electric-light fixtures, meters, and other equipment.

The work of the electrician in the building trades is of growing importance, because of the great increase in the number of homes and buildings of all kinds which are constantly under construction. In this trade, as in many others, the man who is most steadily employed is the one who has the greatest amount of skill and the best knowledge of the technical details involved in trade processes. The house wireman must be able to read and interpret blue-prints, and must know the electrical aspects of the building code, which tells what is permitted and what is forbidden in wire installation. He must also know how to plan circuits when there is no plan to guide him, and also how to test his circuits and make necessary repairs. Electrical contracting requires considerable knowledge of other building trades, in addition to a knowledge of architectural drawing and principles of business.

The plasterer. It is the job of the plasterer to finish off the walls of a building so that they will be ready for paint, paper, or calcimine, or whatever decoration the owner desires. The tools which the plasterer uses in plain plastering are the *hawk*, which is a small board with a handle for holding a supply of plaster up near his work; the *trowel* with which the plaster is spread; the *float*, which is used for smoothing purposes; the *darby*, used for straight-edging; and the *scratcher* for roughening the first coat of plaster so the second coat will stick when it is put on. Various types of molds are used for ornamental and architectural plaster work. These molds are spread with fresh plaster which is allowed to harden, leaving a kind of cast to be used in making the final design. Or an imprint is made in the fresh plaster with the molds, leaving the desired designs on walls or ceilings.

The work of the plasterer entails considerable stooping, reaching, and lifting of plaster, and requires physical strength, but it is not what would be called very heavy work, nor is it a dangerous occupation. For some reason the number of plasterers has not kept pace with the demand for their services, therefore, plasterers have in recent years received higher wages than any other group of building-trade workers. In addition to a thorough knowledge of the actual work of his trade, the skilled plasterer must be familiar with many things which aid him in doing the work. For example, he must know the formulas for mixing various coats of plaster used on interiors. He must also know how to mix the cement for outside or stucco work, because this is becoming a very popular method of covering dwelling houses. He should also understand the reading of blue-prints, and architectural and detail drawings.

The painter and decorator. After the carpenter, the bricklayer, the tileman, the plumber, the electrician, and the plasterer have completed their work, it is time for the *painter and decorator* to begin. The operations include painting the interior woodwork, the walls, and the ceilings, also the exterior walls, the porches, and the roofs of houses and buildings.

Painters and decorators prepare new interior plaster surfaces by applying what they call sizing, a liquid which seals up the pores. Old plaster surfaces are prepared by removing previous coats of paint or paper, and by filling holes and cracks with putty or keen plaster. In preparing new interior woodwork for painting they apply a liquid called a filler, while on the outside walls of a new house they apply a preparation called a primer. Some of the other operations consist of applying calcimine, mixing paints, painting roofs, bronzing radiators, and stenciling walls and ceilings.

A *paper hanger* first removes the old paper, filling all cracks, and smoothing the walls. A thin liquid is then applied and allowed to dry. The wall-paper is then cut into strips of the desired length, paste is applied, and the paper is hung, a dry brush being used to attach the paper smoothly to the wall.

The general painter must be familiar with the material of which paint is made, be skillful in securing proper color combinations and correct shades in mixing his paints. He should also study the artistic phases of his work in order that harmony and beauty may result from his efforts. The best painters and decorators are the ones who combine the practical and the artistic in such a way as to secure pleasing results. Dangers from lead poisoning and other ill effects from paint fumes must be guarded against, or they may produce serious illness and disability.

The structural-iron worker. When it comes to building twenty- and sixty-story skyscrapers, carpenters and masons cannot do all the necessary work. A steel framework, with reënforced concrete floors and supporting posts, is required. This frame not only saves space and is flexible, but it is nearly fireproof as well. With the coming of such buildings, during the past twenty-five years, the structural steel and iron worker has become an important member of the building trades. The steel beams and other materials used in the framework of an office building are prepared in the shop and sent to the site where the building is being erected. Each beam is marked for

STRUCTURAL-IRON WORKER, USING RIVET-GUN ON TWENTY-SECOND STORY OF A CITY SKYSCRAPER

its exact position. The work of the structural iron worker consists in matching, raising, and putting into place the steel trusses, girders, and beams. When this has been done they are riveted together to form the framework of the building. By using red-hot rivets and a pneumatic riveter all these parts are permanently fastened together.

In this vocation the men work at great heights and on narrow surfaces. To the ordinary observer the work appears to be very dangerous, but the seasoned structural-iron worker thinks

no more of walking along a narrow steel beam thirty stories above the ground than other people do of walking on a wide sidewalk. A level head, bodily strength, agility, and ability to withstand exposure to all kinds of weather are necessary qualifications. The worker must be cool and cautious, yet willing to take necessary chances in the performance of his daily duties. Men of a certain type of physical courage and daring find great satisfaction in this vocation. Only mature individuals are employed in structural-iron work, on account of its hazardous nature. There is, therefore, no apprenticeship in the ordinary meaning of that term, but the trade is not difficult to learn. Any one with proper physical qualifications, and some aptitude for mechanical work, may learn it in a short time. The work is seasonal, especially in climates where the winters are severe, and from the point of view of the junior or senior high-school student is not very desirable. Although the wages are high, on account of the danger to which workers must expose themselves, there are very few opportunities for promotion, and almost no hope that you might be able to start in the business for yourself.

Lathers, shinglers, and floor-layers. There are a few special vocations connected with the building trades that should be mentioned. *Lathers* are the men who put the wooden or metal lath on the studding of the house, while the *shinglers* put the cedar, pine, metal, or slate shingles, or terra-cotta tiles on the roof. Both of these trades require special skill and experience, and there is a demand in every community, where considerable building or repair work is being done, for a certain number of workers along these lines. The men in these vocations are paid on a piece-work basis, which means that the real expert is able to earn a high wage. The chief physical requisite for the shingler and the lather is a fine muscular coördination. When a man can take a lath nail, set it against the lath with his left hand, take the hand away, and drive the nail with one stroke of the hammer, his muscles must be trained to work in harmony.

Floor-layers take care of the work of laying the finish floors.

The expensive nature of hardwood flooring has made it desirable to cut it much thinner, in some cases so thin that it is simply what is called hardwood veneer. To lay this expensive flooring requires very expert handling to avoid splitting and the waste of costly material. Each nail driven into this hardwood veneer must be sunk, and the hole filled with putty. The worker then uses a sanding machine, driven by an electric motor, to make the surface smooth before the wood is filled and varnished. Great care must be taken also in laying borders, matching board ends, and making sure that the floor is perfectly smooth and level. Some manufacturers of high-grade flooring keep a force of expert floor-layers, and take contracts to install all flooring in newly constructed buildings.

Contractors and builders. Ambitious carpenters, plasterers, and stonemasons work hard to save money so that they may go into the building business as contractors. That is, they examine architects' drawings and plans for new buildings, estimate what the costs will be, and then make bids stating the price for which they will undertake to construct the building. If the building actually costs more than the amount they bid they lose money, and if they bid too high some other contractor will get the job. Hence contracting requires a thorough knowledge of building materials and costs, and good judgment in anticipating all difficulties. The work also requires the ability to organize the efforts of the various crews of workers, such as carpenters, plumbers, electricians, lathers, plasterers, etc., so that they will not interfere with each other, thereby avoiding waste of time and materials. There are general contractors who take contracts for entire buildings, subletting parts of the work to plumbing, heating, electrical, and other special contractors. The contractor is usually a person who has mastered one or more of the building trades, and is therefore able to work with his men, in addition to having the directive and business ability, and the financial resources necessary for carrying large enterprises through to completion. It is a combination of skilled trade and business.

2. *Opportunities, training, and income*

Numbers engaged. The number of workers and apprentices in the building trades, as reported by the 1920 Census, was as follows:

Occupations	Men	Women	Both
Bricklayers and stonemasons	131,257	7	131,264
Builders and contractors	90,030	79	90,109
Cabinetmakers	45,503	8	45,511
Carpenters	887,208	171	887,379
Electricians	212,945	19	212,964
Painters, glazers, etc.	338,035	3,743	341,778
Plasterers, cement workers	45,870	6	45,876
Plumbers, gas and steam fitters	206,715	3	206,718
Roofers and slaters	11,378	0	11,378
Stonecutters (ornamental)	22,096	3	22,099
Structural iron workers	18,836	0	18,836
Semi-skilled workers and helpers	671,487	15,235	686,722
Building trade apprentices	70,183	1,783	71,966
Total building trades	2,751,543	21,057	2,772,600

Only one in one hundred and thirty workers in the building trades is a woman. Outside of the semi-skilled workers there are almost no women engaged in these vocations, except as painters and glaziers. There is a growing field for women workers in connection with interior decorating. They do not perform the work of calcimining, but they do some papering and interior staining and painting. They usually have better judgment than men workers in selecting harmonious color schemes for calcimining or papering walls and ceilings, and they frequently are employed to do mural painting and the delicate stenciling for borders.

Preparation. Preparation for the building trades is by apprenticeship, or through attendance at trade schools, part-time schools, and evening high schools. There were 71,966 apprentices to the building trades in 1920, and the number has greatly increased since that time. This increase is inferred from the fact that construction of all sorts in 1920 amounted to an investment of $1,427,000,000, while in 1925 it reached a total of $3,879,000,000, or nearly three times as much in amount spent

Jack K [illegible]

for building operations. An apprentice works at his trade from two to four years before becoming a journeyman. During the first two years the apprentice, if he is under eighteen years of age, attends continuation school for four hours a week. After he is eighteen he puts in full time on his master's working crew, and learns to perform all of the operations of the trade. An apprentice receives from $12.50 to $15 per week, sometimes as much as $20 per week during the last two years of apprenticeship.

For the building trades, eighth-grade education is usually necessary. For those who desire to become contractors and builders, or subcontractors in their own special trade, a high-school training, with some attention to business courses, is very desirable.

Conditions of work. Conditions under which the building trades are carried on have been mentioned under each trade. In general the working conditions are favorable, except for those who have to work on exterior construction work during cold and stormy weather. The inside workers, lathers, plasterers, electricians, plumbers, floor-layers, and interior decorators have favorable conditions, being protected from the weather and having work that involves very little in the way of heavy lifting. The carpenters who work on the framework, who put on the siding, and who do the roofing, and also the cement and brick and stone workers, have more outdoor work to do and are therefore more likely to be interrupted by bad weather than those engaged in the first-named group of building trades.

Income. Unskilled workers in the building trades receive from $2.50 to $5 per day, while skilled workers receive from $6 to $15 per day. The highest paid building-trade workers are the plasterers and cement workers, who receive from $8 to $15 per day. The average wage for skilled building-trade workers is approximately $8 per day. Lathers and expert floor layers who work by the square yard sometimes earn higher wages than those indicated above. During times of business expansion,

when many homes, factories, and office buildings are being erected, the building trades are among the best paid and most desirable types of vocations. Workers in these trades also enjoy good social standing. The improvement of attitude on the part of the public toward all types of skilled workers is a matter that needs to be understood by young people, who are thinking about a life career. In this country, work is honorable, and the income of these workers is sufficient to enable the worker to give his family the advantages of good schooling and comfortable living conditions.

Jack Frizzia

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Make a study of the life of an apprentice boy in the days of Benjamin Franklin.
2. What are the most serious health dangers connected with the vocation of painter and decorator?
3. Is the demand for cabinetmakers in these days sufficiently large to justify a person in spending the time and energy to learn the trade? Find some cabinetmaker in your town and ask him if he would advise a boy to enter that vocation.
4. In paying a lather by the square yard for his work, do you deduct the openings left in the walls for doors and windows in figuring how much you owe him for the job?
5. What is the difference between tongue-and-groove oak flooring, and veneer oak flooring? Which costs the more to lay?
6. Which is the better place to learn to be a carpenter, in the woodworking shop of the high school or as an apprentice, working with a master carpenter?
7. The next time you go to the city make it a point to find where a skyscraper is being built. Watch the structural-iron workers as they catch the red-hot rivets and set them with the pneumatic riveter. Do you think you would like to work as a helper to one of these men?
8. The plasterer's job seems to be about the dirtiest, but it is white dirt, and because of the lime in it it is not particularly injurious. One might be willing to be spattered with a little white "mud" five and a half days a week for $75 per week, a wage that many plasterers are paid.
9. Does it cost more to have a house built with siding or boards on

the outside, or to have it done with stucco? Ask the first contractor you happen to meet how this is. The contractor has probably figured the cost of many houses in both ways.

10. If you have an opportunity to see a house in the first stages of construction, go over some Saturday morning and watch the different workmen. See if you can tell what each one *is* by what he *does*. Also think whether you would like to do work of that kind for a living.

SELECTED REFERENCES

1. Allen, J. P.: *Practical Building Construction.*
2. Gowin, Wheatley, and Brewer: *Occupations*, 184–204.
3. Milwaukee Vocational School Series: *My Life Work.* Monographs in the Building Trade Series on: (1) "The Carpenter"; (2) "The Bricklayer"; (3) "The Plumber"; (4) "The Electrician"; (5) "The Painter and Decorator"; (6) "The Sheet-Metal Worker"; (7) "The Plasterer"; (8) "The Steamfitter"; and (9) "The Structural Iron Worker."
4. Platt and Farnham: *The Book of Opportunities*, 73–75 (woodworking); 65–72 (building trades).
5. Rosengarten, Wm.: *Choosing Your Life-Work*, 238–42 (plumbing); 313–18 (woodworking).
6. Ziegler and Jaquette: *Choosing an Occupation*, 164–87.

CHAPTER XII

HOME-MAKING, FOOD, AND SHELTER-PROVIDING VOCATIONS

1. *Nature of the work*

Value of the home-maker. It might be well said of human beings, "by their homes ye shall know them." We judge people's educational and social standing by the kind of homes they live in. Man lived first in the cave, then the rude hut made of bark, then the tent of skins or cloth, then the log cabin, and finally the many-roomed house of civilized man. The art of home-making has progressed with the improvement in house building. The houses of the cave man and the savage did not require much looking after, hence the women were expected to do most of the drudgery. They planted and harvested crops, were the hewers of wood and the drawers of water, made clothes and rugs of skins, were the first weavers of cloth, fashioned their own cooking utensils, and left the men of the tribe free for hunting and war.

The value of the home-maker was recognized, however, and her praises were sung by poets and bards, even among the most primitive peoples. Perhaps the most beautiful tribute to the home-maker was voiced by King Solomon, when he said:[1]

> The value of the thrifty housewife is far above rubies. . . . She is like the merchant's ships, she bringeth her spoil from afar. . . . She riseth also while it is yet night and giveth meat to her household. . . . She seeketh wool, and flax, and worketh willingly with her hands. . . . She layeth her hands to the spindle, and her hands hold the distaff. . . . She maketh herself coverings of tapestry; her clothing is silk and purple. . . . She is not afraid of the snow for her household; for all her household are clothed with scarlet. . . . She maketh fine linen and selleth it; and delivereth girdles unto the merchant. . . . She looketh well to the ways of her household, and eateth not the bread of idleness. Her children arise up and call her blessed; her husband also, and he praiseth her.

[1] The Bible, Proverbs, chap. XXXI, 10–28.

The American home-maker does not do all the things mentioned in praise of the thrifty housewife of King Solomon's day, but her vocation is just as important to the welfare of her family and of the Nation as it ever was. She cares for and rears the children; she selects and prepares the food, or sees that it is done; she takes care of and supervises the making of the children's clothing; she sees that the house is kept neat and clean; she selects the furnishings and home decorations; and she looks after the family health and recreation. When all of these duties are well performed it means that preparation, thought, and skill of a high order are employed in the task. Hence home-making rises to the dignity of an art or a profession. Since in this country, from eighty to eighty-five per cent of the women over twenty-five years of age are engaged in home-making, it is one of the most numerous as well as most vital of all vocations.

Character of the work. Many people look upon the work involved in keeping a home as drudgery. Nearly every woman hopes some day to be able to have a servant or two to do the housework, in order that she may devote herself to other things. When looked at from the proper point of view, however, the vocation of home-making becomes a fascinating enterprise, in which a person can find employment for the highest type of trained intelligence. It also gives scope for the exercise of the best artistic and social talents. A statement of a few of the duties which the housewife must perform, or superintend, will give an idea of the variety of the work, and also the different kinds of ability necessary to the proper accomplishment of the home-maker's tasks.

The home-maker as purchasing agent. There are some twenty million homes in this country, and some one has to do the buying for those who live in them. When we remember that from seventy-five to eighty per cent of the family income is spent for food, rent, clothes, and operating expenses, the responsibility resting upon the purchasing agent is seen to be very great. Since it is the housewife who does most of this buying,

it will make a big difference to the family whether or not it is carefully or carelessly done. If the home-maker knows about quality as well as prices; if she has worked out a family budget, and is able to meet family needs, and still keep within the family income, she is making a contribution to family welfare which it is difficult to overestimate. Savings, recreation, special comforts, and the higher life of the home are all influenced by the success of the home-maker as a buyer.

WORKING AT THE SEWING MACHINES

The home-maker as a manager. The home-maker has so many different things to do that it is easy for her to illustrate the old adage: "Man works from sun to sun — woman's work is never done." But when a home-maker organizes her work systematically — when she has a schedule of duties, or regular routine for the performance of daily tasks — she usually finds that she can accomplish all her work and have time to spare for social and other interests. Ability as a manager is also shown in the way in which children are trained to assist in keeping the house in order.

Even where there are servants in the home it is a good policy to have the children coöperate in performing household duties. The child who is trained to keep his own room in order, take good care of his clothes, and perform cheerfully the assigned tasks about the house or yard, is receiving valuable training in citizenship, as well as home-membership. When servants are

hard to find, hard to keep, and very expensive, as is the case at the present time, it is the part of wisdom for the home manager to provide herself with mechanical devices for making housework easy. She should then train her children in the use of vacuum cleaners, mangles, or washing machines. They can be trained to think of the handling of these devices as an interesting game. Skill in management often means the difference between household duties as drudgery, and the same duties performed as enjoyable tasks.

The home-maker as dietitian and nurse. Since the health of the family depends to a great extent upon what they eat, the home-maker must know food values, the best methods of preparation, and desirable combinations of food for securing a balanced diet. These requirements mean that the real home-maker must be more than just a good cook. She must learn what foods are best for her family, and how to prepare them in such an appetizing way that the family will like them. Her kitchen is her laboratory, in which she carries on scientific experiments in food preparation, and in which she can make use of the principles of chemistry, biology, and physics which she learned in high school or college. In this laboratory she has an opportunity to invent new food formulas or recipes, to test the recipes worked out by others, and to exercise her skill and ingenuity in preparing palatable dishes for her family and guests.

The home-maker needs to know the rudiments, at least, of nursing. In major illnesses a trained nurse will probably be called in, or the patient will be taken to a hospital, but in cases of minor sickness the mother of the family performs the duties of nurse. She needs to know how to use a clinical thermometer, what simple remedies to apply for cuts, scalds, and burns, how to bandage a wound and administer first aid and make the patient comfortable until the doctor arrives. She must also understand the principles of sanitation as a means of disease prevention. The intelligent coöperation of home-makers with health authorities is necessary to keep down epidemics and raise the general health standards of a community.

The home-maker as dress designer and milliner. In these days of ready-to-wear clothes for men and women, it might seem that the home-maker would not need to become a dressmaker or milliner. However, a knowledge of textiles, color combinations, and the artistic principles involved in costume design is a means of making sure that the things which one selects are both economical and appropriate. Then too, where one has a gift for this work it should be cultivated, since it enables the person to be well dressed at small cost, and is also a means of self-expression. In addition to the making or selection of clothing there is the proper care of wearing apparel for all members of the family, involving mending, alteration, cleaning and pressing, protection from moths, and storage in closets and trunks.

The home-maker as interior decorator and landscape gardener. When a person of wealth builds a home, the artistic features of house and grounds are taken care of by the interior decorator and the landscape gardener. For the home of ordinary income, however, these services must be rendered by the home-maker or some member of the family. Here, as in the other aspects of home-making, actual performance of the work is not as essential as knowledge of how it ought to be done. Selection of curtains, draperies, rugs, light fixtures, and furniture demand care. Judgment also is required in deciding upon tinting of walls, or selection of wall paper, so there will be an harmonious color scheme. Pictures or other decorative objects must be selected with a view to the total effect from an artistic point of view.

The yard and garden require study and intelligent treatment if the house is to have its appropriate setting. The work and planning involved in landscaping may be made one of the best means of recreation and healthful exercise by various members of the family. All of them can be taught to take great pride in the beautification and upkeep of the grounds, whether large or small, and to do their share of the necessary work.

The home-maker as director of education, play, morals, and health. In addition to her other accomplishments, the home-maker must be a kind of social engineer. Almost as important as providing for and supervising the preparation of food, the selection of clothing, and the furnishing of the home, is the task of making the home a cheerful and a happy place in which to live. The mother supervises the education of the children, often performing the rôle of teacher. When Thomas Edison's teacher declared that he was "queer and incapable of learning," his mother took him out of school and taught him herself, and made a much better job of it than the school could have done.

Some one has to plan wholesome play and recreation, take a hand in the selection of playmates, and provide opportunities for group games and sports, so that the children will want to bring in their friends to play with them, and not spend all of their play time away from home. Plans for social life in the form of parties, dinners, home dances, and other activities for the older children must also be made. This involves a knowledge of social customs and conventions, and may be the means of training the members of the home in etiquette and social usage. Again, provision must be made for moral and religious instruction, and training in habits and attitudes which affect the entire life of the individual. In all of these matters the home has the greatest influence, and the home-maker must make a study of the problems involved in order to become as expert as possible in performing her duties and obligations.

Home-making a coöperative enterprise. While the home-maker must necessarily take the lead in the various activities which have been enumerated as belonging to her sphere, she cannot make a real home without the coöperation of the other members of the household. True home membership means willingness to take an active part in plans for the improvement of the home, inside and out.

The father, although most of his time is taken up with the necessity of providing the family income, must give time and thought to home-making problems. He is not on the job

twenty-four hours a day, as the mother usually is, but he can contribute his bit by giving counsel, advice, and both moral and physical support in the execution of home-making plans. The children also can do their part by entering whole-heartedly into the spirit of the home-making game. If the home-maker has to do all of the work about the house and yard herself, she has no time left for social life, recreation, or self-improvement, but if the home-maker has the joyous coöperation of all the members of her household, and if the spirit of service of each for all and all for each prevails, home-making becomes a happy privilege.

2. *Other vocations related to home-making.*

There are many thousands of people who have no homes. Single men and women at work in the cities and industrial centers have to depend on clubs, rooming-houses, boarding-houses, and hotels as places in which to live, and upon dining-rooms, cafeterias, lunchrooms, and restaurants as places in which to secure their meals. Over six hundred thousand people are engaged in vocations which provide this type of service for those who have no homes of their own, or who are temporarily engaged in travel away from their homes.

Hotel keepers and managers. The task of the hotel keeper or manager is to provide comfortable rooms, satisfactory food, and such comforts and attentions as will make the guests feel contented. This requires not only good business ability, but such social qualities as affability, cheerfulness, and ability to meet and make friends with people. Hotels differ, of course, in accommodations from those offering the barest necessities of lodging and meals, to those having the most luxurious bedrooms, reception rooms, banquet halls, dining-rooms, and other provisions for the comfort of their guests that one could imagine. In large hotels the manager or owner is seldom seen, except by the most prominent guests. The general public is served by workers trained in the art of hospitality, whose chief aim is to make visitors welcome, comfortable, and happy dur-

ing their stay at the hotel, whether they remain one day or a month.

Other hotel vocations. Next to the hotel manager in importance in the hotel business is *the chef*. He is not merely a cook — he is a food expert, and must understand the preparation of food in large quantities in a manner to meet many different tastes. Next to the manager he is usually the highest paid person in the hotel's employ. Other hotel employees are the desk clerks, corridor hostesses, waiters, chambermaids, bell boys, laundry handlers, cleaners, bootblacks, and so on, constituting a well-organized and disciplined personal-service army which ministers to the needs and whims of the traveling public.

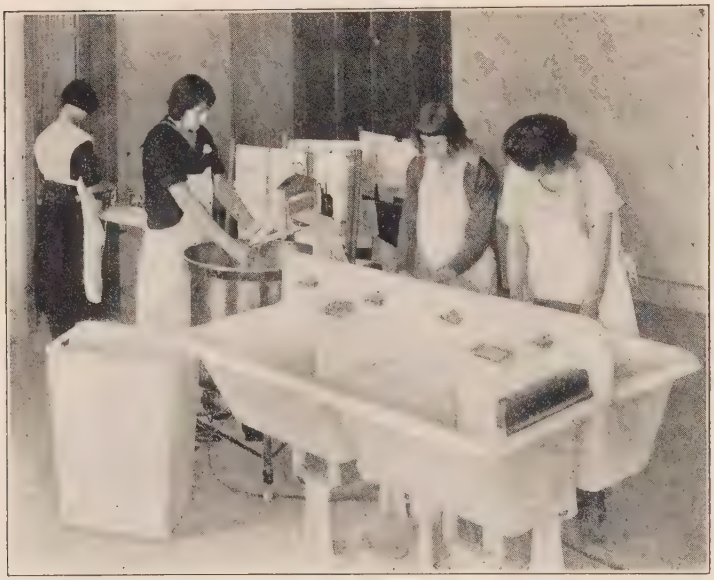
Institutional management. The person engaged in institutional management is one who applies to a hotel, sanitarium, college dormitory, public school lunch-room, or other public institution the principles of home-making on a large scale. She may have charge of the food service, and manage all the dining-room service of an educational institution; she may have charge of the upkeep, repair, furnishing, and general oversight of the dormitories of a college, or the rooming facilities of a city club; or she may have charge both of furnishings and food service. The position is sometimes called housekeeper, domestic supervisor, house mother, or house superintendent. The position requires technical knowledge, executive ability, tact, and a spirit of friendliness. A knowledge of how the various tasks under her supervision should be done, and the ability to train inexperienced persons in the performance of those tasks, is a necessity in successful institutional management.

Restaurants, cafeterias, and tea-rooms. Restaurants and other eating places are more numerous than hotels because in the cities many thousands of business men and workers of all sorts eat at least one meal a day away from home. In restaurants and tea-rooms the guests are served by waiters who take the orders and bring the food to the tables from the kitchen, or serve it upon counters directly from the great ranges where it

is cooked. In cafeterias the guests take their trays and help themselves to the food displayed on the serving tables. The advantage to the guest in the cafeteria is that he can see and choose his food, and receive quick service. The advantage to the guest in the restaurant of the better type is that he can be served leisurely and enjoy his meal in attractive surroundings, often to the accompaniment of good music. Tea-rooms usually make a specialty of catering to the tastes of women guests. The food is daintily prepared, and the effort is made to create as homelike an atmosphere as possible. The final success of any of these eating places depends upon the quality of the food, choice of location, careful buying, prevention of waste, and ability to handle employees.

Caterers, stewards, and dietitians. *Caterers* plan and serve banquets, usually away from a regular dining-room, for lodges, churches, clubs, and various kinds of social gatherings. *Stewards* have charge of the food service on boats of all sorts, and on the dining-cars of passenger trains. *Dietitians* are people who have made a scientific study of food values, food preservation, and preparation. They not only plan meals, but advise people regarding the most suitable diet for the maintenance of health. The dietitian plans the meals for hospitals and schools, and supervises the preparation and serving.

Boarding- and lodging-house keepers. More numerous than hotel keepers, restaurant, café, and lunchroom keepers, are the boarding-house and lodging-house keepers. Thousands of home-makers add to the family income by taking in a few boarders. Other thousands take roomers, either with or without board. In the towns and cities also there are a great many rooming-houses, which simply provide sleeping-rooms, but have no other features of a hotel. Boarding- and rooming-houses serve a large constituency, because their prices usually are moderate and within the range of the incomes of clerks and working people, who could not possibly afford to stay at even medium-priced hotels, or eat at restaurants. A well-conducted boarding-house, moreover, renders a distinct social service in



LEARNING HOW TO DO LAUNDRY WORK

providing home cooking and home surroundings for its boarders.

3. *Training, opportunities, and income*

Opportunities. There are some twenty million home-makers who preside over homes in this country. In the food-preparing and serving, and in the shelter-providing vocations, there are five hundred thousand more workers engaged. This makes home-making and its immediately allied vocations the most important field of vocational service, from the standpoint of the physical and health needs of our people. These vocations also claim the greatest number of workers.

It might be claimed that home-making is not properly a vocation, since the housewife does not receive salary or wages. In the best sense, however, it is a real vocation because it renders distinct social service, and also because it conserves

economic values. It deserves the dignity of being rated as a calling or vocation, since it is coming more and more to demand scientific training for its successful pursuit. The successful home-maker's reward comes not only in the happiness, love, and devotion of her family, but also in improved economic status of the home — a larger savings account, a larger and better furnished home, and in the ability to have many of the comforts and some of the luxuries of life. These rewards of the home-maker cannot be stated in average incomes, but they amount in the aggregate to many millions of dollars every year. One economist estimates the money value of the home-makers' services, including health contribution and savings on purchases, as $18,000,000,000 a year.

Proportion of men and women engaged. In round numbers there are 60,000 hotel keepers and managers, of whom 45,000 are men and 15,000 are women. Restaurant, cafeteria, and lunchroom keepers number about 90,000, with about 75,000 men and 15,000 women. Some 20,000 men and 140,000 women, or 160,000 all together, are engaged in keeping boarding- and lodging-houses. There are about 225,000 people in this country employed as housekeepers and stewards, the women numbering 205,000 and the men 20,000. The 20,000,000 or more home-makers being all women, it can be seen that home-making and the related vocations offer the greatest number of opportunities to women workers, either as employees, or as life partners in the fundamental task that centers around the family and the home.

Income. The income to be expected from vocations allied to home-making, such as hotel work, restaurant service, institutional management, and so forth, is difficult to estimate because of the great varieties of service performed, from that of the housewife with one boarder to that of the great thousand-room hotels of the larger cities. The service is in constant demand because people must eat and sleep, and they are willing to pay for these services in proportion to their means and their tastes. Workers in these vocations usually receive their board

and lodging, in addition to their wages, hence it should be easier to save a part of the income.

There is, however, an element of uncertainty in the income of waiters, bell boys, porters, because their regular pay is sometimes quite small. The management expects them to supplement their pay with tips or gratuities given them by the guests. This is a more or less demoralizing custom, and interferes with the rendering of impartial service to all guests. Chefs, cooks, housekeepers, hostesses, desk clerks, and institutional managers generally receive regular salaries, and these are determined by the size and prosperity of the hotel or other institution where service is rendered.

Types of training available. There are several schools where hotel management and similar vocations may be studied. This training is usually on the part-time basis. The students are engaged in hotel service in various capacities, and devote the rest of their time to supplementary studies. The schools are maintained by hotel associations, and the graduates are absorbed in the service of the member hotels. The great majority of hotel and restaurant workers, however, learn their vocations through the apprenticeship method. They simply secure opportunities to work in minor positions, and by faithful attention to their tasks earn promotion as they learn the duties of the positions higher up.

For the positions of chef, cook, steward, dietitian, restaurant and café manager, institutional manager, housekeeper and home-maker, courses in home economics are necessary. It is true that the great majority of those so engaged at the present time have learned what they know by the apprenticeship method, but it is becoming more and more necessary to have careful and scientific training in these fields in order to have the greatest degree of success. The dietitian and the institutional manager need to study biology, physics, and chemistry and to know how to apply these sciences to the problems of nutrition, sanitation, and food preparation. A knowledge of accounting, budgeting, employment management, and per-

sonnel work is also important. The scientific home-maker needs to know these things, and to be taught how to appreciate æsthetic values in beautifying house and garden.

Courses in food and clothing, household arts, and home decoration, are offered by practically every large high school, and by a very great number of small high schools. Other courses offered are elements of design, study of textiles, household management, child care and nursing, dietetics and the elements of nutrition, and food preparation and planning. Household chemistry and physics, as well as biology, are offered as supplementary courses. State agricultural and mechanical colleges, state universities, and many private schools and colleges offer home-economics courses of college grade. Cornell University offers a course in hotel management, in coöperation with the American Hotel Association. This course is given in conjunction with work in institutional management in the School of Home Economics.

In addition to high-school and college courses available for full-time students, there are numerous extension courses, covering every phase of home economics, given usually under the auspices of the state agricultural colleges and state universities. Lectures and demonstrations are given, clubs are organized, and printed material is distributed. Home-demonstration workers have carried the gospel of better homes and brighter homes to many communities, both urban and rural, in every part of the country. In 567 counties of the South, during 1920–21, 240,000 girls and women belonged to the home economics clubs, and in the Northern and Western States home-demonstration projects were carried on in 17,399 communities and some 1,330,000 people were reached.[1] These numbers are increasing each year.

Home-making for family groups, and for those who have no family group, is thus seen to be developing into our greatest national industry. It calls for the best brains and for complete preparation. It touches all our lives in one way or

[1] *Journal of Home Economics*, May, 1922.

another, and hence we are all interested in its future development. Either as members of a home circle, or as those who must depend upon hotels, restaurants, tea-rooms, boarding-houses, and rooming-houses for our food and shelter, our happiness and efficiency is largely dependent upon the quality of the service rendered by the nation's home-makers.

SEEK-FURTHER QUESTIONS AND DIRECTIONS

1. Watch your mother or the cook as she prepares a meal. Make a list of the things she does in preparing the meal, such as setting the table, and so forth.
2. What duties about the house do you perform daily? What duties do you perform occasionally?
3. How are your clothes made or selected? Who goes with you when the selection is made? What items are considered in making the selection?
4. If you are a boy, do you think that a knowledge of cooking would be of any advantage to you?
5. What features of home-making are girls most interested in?
6. What contributions can boys make to home-making?
7. What are the duties of a "bell hop" in a hotel? What part of his income is in the form of "tips"? What hours does he work?
8. How does a modern hotel differ from the wayside inn of Colonial days?
9. How do you account for the fact that there are not more girls and boys taking courses in home economics in the high schools?
10. Interview the owner of a restaurant and find out, if you can, just what his work consists of; how he supervises the work of his cooks, waiters, and dishwashers; how much capital he had to have to get started; and what difficulties he has in meeting the wishes of his patrons.
11. Did prohibition make any difference to hotel and restaurant owners?
12. Find out how many separate homes there are in your city or school district, and also how many people are engaged in vocations connected with hotels, boarding-houses, restaurants, cafeterias, and so forth.

SELECTED REFERENCES

1. Filene, Catherine: *Careers for Women*, 209–54.
2. Hatcher, O. Latham, editor: *Occupations for Women*, 316-24 (home economics).
3. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 361–99 (home-making).
4. Ketling, Elizabeth: *Helpful Talks with Girls*, Chapter IX, "The Boarding-House Keeper."
5. Leake, Albert H.: *Education for Girls and Women*, Part I, on "Home Management."
6. Platt and Farnham: *The Book of Opportunities*, 373–81 (hotel and restaurant); 381–83 (home-making).
7. Stanford University Bulletin: *Vocational Information*, 133–36 (home economics).

CHAPTER XIII

PERSONAL AND DOMESTIC-SERVICE VOCATIONS

1. *Nature of the work*

Not counting the persons engaged in home-making, hotel, food-serving, and shelter-providing vocations, about which we studied in the preceding chapter, there are some three million workers engaged in what are known as personal and domestic-service vocations. Persons engaged in these vocations have only their services to sell, and this service is rendered to other persons for salaries or for fees. Sometimes this personal service is rendered in the home of the employer, in which case it is usually called domestic service. Sometimes it is rendered in regular business places, rented or owned by the worker. Assistants are frequently needed to meet the demands of the patrons for that type of service, and very good incomes are often enjoyed by the proprietors.

Barbers, hairdressers, and manicurists. People engaged in these vocations take care of the hair, hands, and finger nails of their patrons. When it was the fashion for men to wear long hair and let their beards grow, there was not a great deal of demand for trained barbers. Now that it is the fashion among men to keep their faces shaved clean, and their hair neatly trimmed, barbering has become a vocation at which several hundred thousand persons make a living. It has also become the fashion for women to have their hair bobbed. This has not only increased the number of hairdressers, but has also added greatly to the number and incomes of male and female barbers.

Barbering is a skilled trade which has its strict regulations for training and apprenticeship, and, in most States, there is a State Board of Barbers' Examiners to pass on new applicants for admission to the vocation. There are also legal provisions in regard to the use of clean linen, and the taking of other sani-

tary measures to prevent the spread of skin and other infectious diseases. The barber has to stand all day at his task, and to serve all sorts of people; hence there are many unpleasant as well as pleasant features connected with the work. If his shop is sanitary and attractive and he renders a high grade of service, he attracts the better class of patrons, and often enjoys the friendship of many people in other walks of life. The pay ranges from $3.50 to $8 per day, with an average of approximately $5.

The new styles in women's hairdressing have greatly altered the *hairdresser's* vocation. There are a great many hairdressing parlors where various styles of cutting, trimming, and waving may be had. The fashion of bobbing the hair has created a greater demand for the hairdresser's art than existed when long hair was the vogue. The present-day hairdresser must not only be able to render expert service, but she must maintain an attractive, artistically furnished place of business.

The *manicurist* sometimes has a shop of her own, but usually operates in connection with a barber's or hairdresser's shop. While the barber or hairdresser is attending to the patron's tonsorial needs, the manicurist is trimming and polishing the nails and making the hands look soft and white by her special methods of treatment. It is only in the highest type of barber shop or hairdresser's parlor that such service is in demand, hence the number of manicurists is not very large, and their income is irregular.

Launderers and laundresses. Much of the drudgery is taken out of the modern home by the laundry. Doing the family wash used to be one of the most difficult tasks which confronted the home-maker. Now the family can own an electric washer and have a laundress come in to do the washing and ironing, or the soiled linen can be bundled up and taken to the laundry. The demand for this service has grown to such an extent that there are over five hundred thousand persons engaged in the vocation. If laundry work is performed by the old-fashioned method of tub, boiler, and washboard, it is not

very attractive, but with electric washer and ironer, or with the labor-saving machinery employed by the large laundries it is very much like any other factory employment. Where strong chemicals are used for bleaching, and where employees are more or less unskilled, great damage often is done to the clothes, but these unfavorable elements of laundry service are being eliminated and the demand is on the increase. Except for collectors and delivery-wagon drivers, the employees of a laundry are mostly women and girls, and the pay received is often very low and the hours rather long. Other drawbacks to laundry work are the excessive heat and the steam-charged atmosphere of the work rooms. However, advocates of minimum-wage laws, factory inspectors, and social service agencies are coöperating to improve the working conditions for laundry workers, as well as of workers in other factories.

Janitors, cleaners, and caretakers. Office buildings, school buildings, churches, apartment houses, hotels, and other large buildings have to be cleaned every day. Janitors, cleaners, charwomen, and caretakers usually perform this service. In small buildings, as well as in many large buildings built some years ago, the cleaning is done with broom, sweeping compounds, dustcloths, and dustpans. This is hard work, and not very pleasant to perform on account of the clouds of dust in which one must usually work. Modern buildings, however, are equipped with vacuum cleaners, steam washing devices, and mechanical means of dressing and oiling floors. Such appliances lighten very greatly the labor of the janitors and cleaners, and the work is much more effectively performed. In addition to knowing the art of cleaning, the janitor — especially the head janitor of a large building — needs also to be something of a stationary engineer, because he has charge of the heating plant and must understand the handling of the boilers which generate the steam, or heat the water, or whatever device is employed for providing heat. This is particularly true in apartment houses and schools. In large office buildings the head janitor simply supervises the care-taking

and cleaning processes, because there is a licensed engineer who devotes his entire time to the heating plant.

Elevator tending. This service formerly was a vocation almost exclusively for men and boys, but during the War, when men were scarce and boys were doing men's work, many hotels and business blocks employed women elevator operators. Their services were so satisfactory that many thousands of them are now employed in that capacity. It is a very responsible work, because the lives of people are involved. Skill in handling the elevator mechanism must be combined with great care and strict attention to business. If seats for the operators are provided, and if the hours are not too long, it is a pleasant sort of service, though not very well paid. Automatic elevators in small business blocks, and in many apartment houses, are cutting into the number of elevator operators employed, but there always will be a demand for skilled operators in the hotels and skyscraper office buildings.

Porters, bell boys, and bootblacks. *Porters* and *bell boys* in hotels and about passenger stations carry your luggage, and run all sorts of errands. Many of them receive only the tips or gratuities given them by their patrons. Others are in the employ of hotels, railroad station organizations, or other corporations, and are able to augment their usually low salaries by tips and favors.

Sleeping-car porters take care of the berths and look after the comfort of the people who travel in Pullman cars. They receive small regular salaries and also a certain amount of additional income from tips. The work in these vocations usually is performed by members of the colored race.

Bootblacks clean and shine shoes. Small boys in the cities have their boxes and kits of brushes, and ply their trade on the sidewalks. This field, however, is rapidly coming to be occupied by men with regular stands and comfortable chairs, where one may sit and read while the shoe-shining operation is being performed. Such a stand means investment of capital for equipment, and expenses for rent and up-keep, and takes on the

nature of a regular business. The best bootblacks study the art of staining as well as shining shoes, and many become very skillful. Training is entirely by apprenticeship, and income depends on location, kind of patrons served, and many other factors.

Inside house servants. Over a million persons in this country are engaged in work as servants, either inside or outside of homes and other places where guests are entertained. Due to the preference for factory work, the demand for house servants is always greater than the supply. This has resulted in a very material increase in wages, and in a marked improvement in working conditions for those engaged in domestic service.

USING THE ELECTRIC IRONER

Chambermaids, *nursemaids*, and *ladies' maids* number about 50,000. They take care of rooms in private houses and in hotels and institutions, look after children, and perform personal service in the way of hairdressing, care of wardrobe, and so forth, for their mistresses.

Cooks, *laundresses*, and *house cleaners* who work in homes number nearly 400,000, and are assured of steady employment at good wages. One of the advantages of this type of service is that board, lodging, and laundry are included, so that the cash received is in addition to living expenses. This makes domestic service, for many thousands of women and girls, more remunerative at present than work in a factory.

Inside men servants. For the most part inside men servants are employed as butlers and valets. *The butler* is a kind of general manager of all the servants in a house, frequently doing the hiring of all domestic help, and supervising the purchase of supplies. It is only in homes representing considerable wealth that there are a sufficient number of servants to warrant the employment of a butler. Also the tendency of wealthy people to live in family hotels, where the servant problem is handled on a coöperative basis, tends to make the vocation of butler a vanishing one. *Valets* perform services for the men of a family corresponding with the duties of a ladies' maid in relation to the women members of the household. They take care of the men's clothes, help them with their toilet, and give attention to all their personal needs. As in the case of the butlers, such service is only in demand in the homes of greatest wealth, and it is a type of service that few men care to engage in.

Outside servants. *Chauffeurs, coachmen,* and *stablemen* handle the transportation equipment for well-to-do families. There are only about 25,000 coachmen and stablemen employed in this country, but a few of the older families still retain their horses and carriages, partly because it is somewhat unusual. Automobiles have come into such universal service that people of wealth maintain several motor cars and employ a number of men to drive and take care of them. This gives employment to about 300,000 men, and is a type of work that may be very attractive. Living conditions are good, wages are higher than in cab and taxi-service, and if the relations are mutually satisfactory the tenure is quite secure.

Gardeners or *landscape men* are employed on large estates to take care of the lawns, shrubs, trees, and flower gardens. They either do the work themselves, if the grounds are small, or oversee the work where the grounds are extensive. They need to have a practical knowledge of botany and entomology, as well as a thorough understanding of the art of landscaping. Wages vary with size of estate and the skill and experience of

the gardener. The conditions of living and tenure are generally very good. It often happens that a man and his wife find congenial employment on the same estate, the woman as housekeeper, cook, or maid, the man as chauffeur, coachman, or gardener. Since living quarters and food are generally included, it makes possible the saving of a considerable portion of the wages received.

2. *Training, opportunities, and income*

Numbers engaged. Taking into account all of the personal service vocations treated in this chapter, we find that there are over 3,000,000 people engaged in rendering such service. If we estimate that there are some 44,000,000 people engaged in gainful vocations in this country, it means that every fifteenth worker is employed in domestic or personal service of some kind. Two thirds, or about 2,000,000 of these workers, are women, and about one third are men. House-servants — inside and outside — represent about one half of the total number of persons engaged in these vocations.

Training. As a rule, very few persons with high-school education engage in this group of vocations, and special school training is not necessary. However, there are many courses in home economics, nursing, and child welfare which are open to persons engaged in domestic service, and by availing themselves of these educational opportunities these workers frequently are able to increase their efficiency and secure positions as house and institutional managers. There are training schools for barbers and chauffeurs, and gardeners are able to find courses which help them to improve themselves while in service, and thereby improve their income or earn promotion. In the main, however, training for the personal service and domestic vocations is by the apprenticeship method. The length of time necessary to learn the vocation varies with its complexity, but in general the apprenticeship period is not long. That is why persons with limited education are able to learn and make a living in the personal-service vocations. Success

depends on ability to get along with people, on ability to take a keen interest in that type of service, and on the character qualities of industry, faithfulness, and willingness, and desire to please.

Income. In some of the personal-service vocations the income is irregular and precarious; in others the remuneration is both steady and reasonably satisfactory. As previously stated, domestic help is at present paid wages that amount to more than a person of similar ability and training would receive in a factory, but the lure of sociability, and the feeling that factory work is more respectable, cause many workers to crowd into the factories while good positions in household and domestic service go begging. This makes household help scarce and keeps up the wages, but it has a depressing effect upon the wages of factory workers. When people come to learn the lesson that all honest work is dignified, and that service in another person's home is just as honorable as service in that same person's shop or factory, there will be a better balanced distribution of workers and wages as between the factory vocations and the personal-service vocations.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. The next time you have your hair cut or bobbed, as the case may be, make note of the surroundings and equipment of the barber's or hairdresser's shop. Ask the proprietor to tell you how much per hour he has to pay for helpers, how much an apprentice earns, and how long it takes to learn the trade.
2. How is the washing and ironing done at your home? If your mother has an electric washing machine or dishwasher, ask her to show you how it works. If the family wash is sent to the laundry, see if you cannot get permission, through the laundry-wagon driver, to visit his laundry some day and see how it is done.
3. Does your school janitor use brooms, dustcloths, and dustpans, or is the school equipped with vacuum cleaners for floors, chalk trays, and halls?
4. The next time you take a ride in an elevator, notice whether the operator is a man or a woman. Is it a very easy or a very difficult type of work?

5. What do you think about the sign in the railroad station: "The red-cap men will carry your baggage free"?
6. Are there any small boys working as bootblacks in your town?
7. What are some of the conditions that influence people against positions as house-servants? Could these conditions be improved so that house service would be as popular as factory and store vocations?
8. Does any one in your community still keep a carriage and a span of horses for pleasure driving?
9. Seek an opportunity to talk with the chauffeur of some wealthy family, and find out all you can about his duties, and the advantages and disadvantages of his work.

SELECTED REFERENCES

1. Fredericks, C.: *Efficient Housekeeping.*
2. Hoerle, H. C., and Saltzberg, F. B.: *The Girl and the Job,* 41–43 (the waitress); 94–96 (the manicurist).
3. Moran, Selby A.: *Over One Hundred Ways to Work Your Way Through College.*
4. Platt and Farnham: *The Book of Opportunities,* 371–73 (beauty culture); 375–94 (personal and domestic service).
5. Southard, Lydia: *Institutional Household Administration.*
6. Weaver, E. W., and Byler, J. F.: *Profitable Vocations for Boys,* 73–74 (bell boy); 75 (barber).
7. Weaver, E. W.: *Profitable Vocations for Girls,* chapter XVII ("Domestic Service").

CHAPTER XIV

BUSINESS VOCATIONS INVOLVING CLERICAL AND SECRETARIAL SERVICE

THE commercial vocations are those which have to do with the sale and exchange of goods. There are, however, many other kinds of employment so closely related to buying and selling that they also are called commercial vocations. These are the clerical and the secretarial vocations. We will discuss them first because they are the doors through which most young people find their way into the various business vocations of buying, selling, and exchange.

1. *The non-recording vocations*

Types of employees. The non-recording vocations are those most likely to be open to young persons of fourteen, fifteen, and sixteen years of age. *Errand boys, messenger boys, office boys,* and *pages* do errands for clerks and department heads, carry messages within the store, and answer the questions of patrons in professional offices. Their business is to make themselves generally useful, and to keep their eyes and ears open and their mouths shut. They have a good opportunity to learn the requirements and duties of the positions just ahead, and thereby earn promotion.

Filing clerks have charge of the office records and filing cases, where letters and other valuable reference documents are kept. The filing clerk must learn to handle such items quickly and accurately, and be able to find them promptly when needed. The filing clerk often handles the mail, sorting it, and seeing that it reaches the persons in the office to whom it is addressed. Large offices have special mail clerks for this service.

Shipping, receiving, and *stock clerks* handle the goods as they are brought into, stored, or shipped out of the business establishment. It is their business to keep the stock in order, know

where each of the different commodities is to be found, and to see that it is packed, labeled, and dispatched quickly on orders from the sales department.

Cashiers and *bundle wrappers* receive and change money, and prepare the bundles for delivery to customers in the retail departments of the large stores.

The non-recording vocations are filled, for the most part, by men and boys. Of the 400,000 persons engaged in these vocations, only 40,000, or one tenth, are women and girls.

Training and income in non-recording vocations. While an elementary-school education usually is sufficient as a background for making a start in a non-recording commercial vocation, it is desirable to have at least junior-high-school education, and to have taken the courses in junior business training offered in these schools. Preliminary training in filing, handling cards and reports, and in courtesy, promptness, neatness, and accuracy will enable a person who enters the business world through the non-recording vocations to secure promotion to higher types of positions. With preliminary training in the school one can enter these vocations and very quickly learn the specific duties required by a given firm.

The entering ages for office, errand, and messenger boys and girls in stores are from fourteen to seventeen, and about two thirds of all non-recording workers are engaged in this sort of work. This means that the boy or girl who leaves school early generally drifts into this type of job. It also means that, unless he is able to earn promotion before he is eighteen years old, some younger person will be employed for his work and he will have to get out into some sort of unskilled industrial vocation.

The only reasonably permanent non-recording vocations are those of filing, shipping, receiving, and stock clerks, and for these positions a certain amount of training is necessary, in addition to character traits of reliability, accuracy, neatness, and persistence.

Office and errand boys receive from $5 to $15 per week, and

filing and other non-recording clerks receive from $15 to $30 per week, depending on length of service, skill, and responsibility.

2. *The recording commercial vocations*

Types of employees. The recording vocations represent the next step upward, in the line of promotion in business, above the non-recording vocations. Among these may be mentioned *bill clerk, collector, cost clerk, order clerk, price clerk, stores clerk,* and *invoice clerk.* In smaller businesses all of these duties are performed by one person, but in a large establishment there are specialists who handle only one type of clerical service, and consequently become very accurate and expert at it. *The price clerk* puts the price tags on all goods. This means that he must know the wholesale cost of a given article, must add cost of freight, handling, overhead, the amount of profit which the experience of the firm shows can reasonably be expected, and then put this on the little price tags in a code understood by sales persons. These tags are then clipped to the goods, or the items are written on the wrappers, boxes, or cartons in which the goods are enclosed. *The stores clerk* has charge of the stockroom, in which is kept all goods not on the sales shelves. This clerk must know where every item of the stock is kept, and see that the sales shelves are replenished after each day's business. *The invoice clerk* keeps track of the incoming and outgoing goods. He must be able at any time to give an accurate idea of the stock on hand. At least once a year he and his helpers check over every item of goods and equipment on hand, and make out a complete invoice. *Bill clerks, order clerks,* and *collectors* attend to proper billing of goods, routing of orders, and collecting of accounts.

These are called the recording business vocations because the persons so employed must keep written account of every item of goods handled. This is done on printed forms, and the records are usually made in triplicate. This makes it possible to keep an accurate account of all goods bought and sold. It also makes possible the tracing of mistakes to the persons who

made them. This means that recording clerks must be quick and accurate, must write legibly, and must know perfectly the fundamentals of arithmetic.

Numbers engaged, training, and income in the recording vocations. Between 1910 and 1920 there was an increase of 40 per cent in the number of men engaged in recording clerical vocations, and 170 per cent in the number of women engaged in these vocations. The number of women employed as recording clerks has been increasing rapidly. In 1910 men recording clerks made up 78 per cent of the total, but in 1920 the men constituted only 64 per cent of the total. The 1920 Census found 1,808,868 persons engaged in recording clerical positions, and of these 1,168,318 were men, and 640,550, or 36 per cent, were women. The Census of 1930 will probably find 2,500,000 persons engaged in recording positions, and about 50 per cent of this number will no doubt be women.

Success in the recording clerical positions requires more training than is required for the non-recording positions. Junior or senior high-school graduation is valuable, although not absolutely necessary. Training in rapid calculation, penmanship, and the making out of all kinds of sales forms is desirable. This training can be secured in the commercial department of a city junior or senior high school, or on the job, provided a person has the interest and the ability to apply himself.

The ages of entrance to the recording clerical vocations are sixteen, seventeen, eighteen, and nineteen, with the largest number finding such places between the ages of eighteen and twenty. In the case of the non-recording clerical vocations we found that customary entering ages were from fourteen to seventeen, and that a great majority of the workers were under twenty years of age. In the recording vocations the majority of workers are over twenty-four years of age. This indicates that these vocations are much more permanent in character than the non-recording, and also that there is a better opportunity to earn a good income and have permanent tenure.

Income in the recording vocations depends upon skill, experience, and the size of the business. Entering salaries are from $15 to $20 per week, and may go as high as $50 per week, or even higher in special cases.

3. *Bookkeeping and accountancy*

Bookkeeping. In business establishments it is necessary to make a record of every transaction, indicating the article sold and the price. Where persons are permitted to buy goods and charge them, or buy "on credit," as we say, it is necessary to render bills or statements at regular intervals in order to make collections. It is also necessary, at least once a month, to cast up a balance in order to find out how much has been sold, how much remains on hand, and what the expenses and profits have been. The person who records these items, makes out the bills, casts up the trial balance, and in general keeps available for the business man a "moving picture" of his business, is the bookkeeper. In small offices or small businesses one person is able to handle all the bookkeeping. Frequently a business man in a small enterprise does his own bookkeeping after business hours. In large business houses there are to be found entry clerks, ledger clerks, journal clerks, bookkeeping cashiers, head bookkeepers, accountants, and auditors.

Accountancy. The accountant has a more responsible position than the bookkeeper. The bookkeeper enters the various items of business as they occur. He keeps an entry book, a ledger, and a journal, and he must know under just what heading or account the various items belong. The accountant is called upon to install complete systems of records and accounts, suitable to the particular business for which they are intended. This requires a thorough knowledge of many types of business, and keen powers of analysis and managerial ability in supervising the technical operation of the accounting system. After an appropriate system of accounts has been established for a given business enterprise, it can be carried out by the regular staff of bookkeepers. The accountant is also called

upon to investigate existing accounting systems to discover their defects, or to detect any frauds that may have been attempted by owners or employees. The person engaged in this type of service is known as a "certified public accountant," and has a recognized professional standing.

THE BUSINESS OFFICE OF A LARGE DEPARTMENT STORE WITH ALMOST EVERY VARIETY OF OFFICE SERVICE IN PROGRESS

See how many different types of office appliance, and what office vocations you can identify

Numbers engaged, training, and income of bookkeepers and accountants. There are approximately 800,000 bookkeepers, cashiers, and accountants, and approximately one half of these are women. The number of men engaged in these vocations increased only about 25 per cent, between 1910 and 1920, but the number of women increased nearly 100 per cent during the

same time. This means that women are entering these vocations in constantly increasing numbers.

Thorough training in bookkeeping, commercial arithmetic, rapid calculation, penmanship, and various types of business transactions are essential. Commercial courses in senior high schools and private business colleges may impart a sufficient knowledge and skill to enable one to make a start as a bookkeeper. High-school graduation at least should be the educational background.

The accountant should have college training, with special emphasis upon economic and mathematical studies. In addition to specific accountancy courses, he needs thorough training in English Composition, Corporation Finance, Public Finance, Transportation, and other special economic problems. Examination requirements for the certified public accountant include Theory of Accounts, Practical Accounting, Auditing, and Commercial Law. There must also be a general familiarity with actuarial science, and a knowledge of city, state, and governmental systems of finance.

The entering age of persons to the vocation of bookkeeping is between eighteen and twenty. A few secure employment below these ages, but fully 95 per cent of the bookkeepers now employed entered the vocation after their eighteenth birthday. This fact indicates that high-school graduates have the best chance of employment as bookkeepers, and also that specific training in bookkeeping should be taken during the last two years in high school if it is to be of the greatest value to the worker.

Accountants and certified public accountants do not enter their vocations until they are twenty-four years of age or older. This delay is due to the fact that much more training and general education are required to enter these vocations; moreover, only persons of maturity and business experience are employed in such responsible work.

The income of bookkeepers is from $20 to $60 per week. Accountants receive from $40 to $100 per week, and certified public accountants from $3000 to $10,000 per year.

4. *Office machine operators*

Kinds of machine operators. In many enterprises the volume of business is so great that the use of machines for addressing, billing, bookkeeping, calculating, card-punching, and duplicating has been found profitable. In such businesses there are also found multigraphs, mimeographs, photostats, and tabulating machines, not to mention the universally present typewriter.

The typist finds employment in every conceivable kind of office. Typing is usually associated with stenography, but there are many thousands of typists who are not stenographers. They are employed as copyists and take dictation directly from a dictaphone. They cut stencils for the mimeograph and operate the multigraph — a kind of printing machine which makes its impression through a ribbon and resembles typewriting. Bookkeeping machines are simply typewriters so constructed that the entries may be made in typewriting on specially constructed books, instead of by handwriting. Training in typewriting is basic to all these vocations.

Machine operators. Calculating machines are mechanical devices for securing accurate results in handling thousands of items in figures. They very greatly reduce the chances for error, and save an infinite amount of labor for bookkeepers and statisticians. They do not relieve the office worker, however, from the necessity of knowing thoroughly the fundamental processes in arithmetic. Machines sometimes get out of order, and the operator must know how to check results for accuracy. Also the better an operator knows mathematics the greater the number of short cuts he can discover in the use of the calculating machines.

Training. Typists and office-machine operators can secure training in most high schools having an up-to-date commercial department, also in business colleges, and while they are working in offices, stores, and other business houses. The beginning age is between eighteen and twenty. There are more women than men engaged in these vocations, and the pay ranges from

$18 to $40 per week. A high-school graduate can become fairly proficient in this type of work in from six to ten weeks of intensive training.

5. *Stenographers and private secretaries*

Stenographers take dictation in shorthand or on stenotype machines, and transcribe their notes on the typewriter. They must be able to get the exact words of the speaker, whether in taking dictation of letters, reports, or other documents for reproduction. A speed of one hundred to one hundred and twenty-five words a minute is usually adequate for office dictation, but in court reporting it is frequently necessary to be able to take two hundred words a minute. In small offices the stenographer is sometimes required also to take care of the bookkeeping and to do general office work, such as filing, and mimeograph work, but generally speaking it is not necessary for the stenographer to know how to keep books. The stenographer must, however, be a rapid and accurate typist.

Private secretaries for business and other executives are usually chosen from among the members of the stenographic force who have shown the greatest capacity for intelligent understanding of the principles of the business of their employer. The private secretary is more than a stenographer — he or she is the confidential and trusted helper of the employer. The private secretary must use judgment and discretion, and is frequently trusted to handle many of the details of the employer's business.

Training, numbers engaged, and income. The number of persons engaged in the vocations of secretaries and stenographers increased nearly 100 per cent between 1910 and 1920. The number of men engaged in these vocations was fewer by 5.5 per cent in 1920 than in 1910, but the number of women had increased by 115 per cent. Of the 615,000 workers, only 50,000 were men. It would seem, therefore, that stenography as a vocation for men and boys is rapidly declining, but as a vocation for women and girls it is increasing very rapidly. Good

men stenographers either become court reporters, or private secretaries, or they are promoted to some form of executive work.

The age at which machine operators enter office work is from sixteen to seventeen, eighteen, and nineteen. Stenographers enter at seventeen, eighteen, nineteen, and twenty, and private secretaries from eighteen to twenty-four, inclusive. The minimum education for stenographers and secretaries is that of high-school graduation. Although the training required for these vocations may be secured in from six months to a year of intensive work, it may be better spread over at least two years and taken in connection with English, history, economic geography, and other cultural subjects which give a good background of general information. Stenographic skill should be acquired during the last two years of high school. To be successful as a private or executive secretary, a person should have had from two years' to a complete college education, combined with first-rate technical training. Ability to do the right thing without being told, initiative, tactfulness, and unfailing courtesy are qualities needed by the secretary.

Stenographers and typists in offices receive from $20 to $40 per week. Court reporters receive $10 a day for court work, and ten to twenty cents per hundred words for making transcripts of testimony. Some of them receive regular salaries of from $2000 to $4000 per year. Salaries of secretaries range from $100 to $300 per month. Occasionally the confidential secretary of a great executive receives a salary as high as $10,000 per year. President Hoover's private secretaries receive $10,000 a year each.

The line of promotion. In the clerical vocations the line of promotion is toward executive and minor executive positions, such as accountant, auditor, chief clerk, head bookkeeper, office manager, or comptroller for those in the recording and bookkeeping vocations. Stenographers may expect to develop into head-stenographers, court reporters, secretaries, and executive secretaries. Stenographers of ability are more likely to be

noticed by managers and executives because they are closely associated with them. This personal acquaintance often leads to more rapid promotion than comes to the ordinary office worker and this fact probably explains why few men remain long in an office as a stenographer; if they have managerial ability it is quickly recognized, and they receive promotion.

Including all of the vocations discussed in this chapter, we find that there are about 2,500,000 workers employed. Working conditions are generally attractive. Workers are able to wear good clothes, hence the designation "white-collar" jobs. There is a possibility of learning the business and securing promotion to executive positions, and employment is fairly steady for the capable, reliable, and ambitious clerk, bookkeeper, stenographer, or secretary.

Disadvantages. Some of the disadvantages of the clerical vocations are that they are confining, being carried on in stores and offices. They are somewhat monotonous because of the repetition of routine duties, day after day. Workers are subject to severe nerve strain from working constantly under pressure. Also it is easy for the worker to get into ruts and fail to develop to the fullest measure of his capacity.

Income. Income for this kind of work is likely to be small at the beginning, and to increase slowly. In deciding between a clerical vocation and a mechanical vocation it should be remembered that the average salary of the clerical employee, working under supervision, is only $1200 per year, while the average income of the skilled workers in twenty-five great manufacturing industries has been found to be $1309 per year. Also that, while the average salary of high-grade clerical workers is $1908 per year, that of trade-union members is $2502 per year.[1] The argument of average income is apparently on the side of the mechanical, as compared with the clerical vocations. In the minds of some persons this advantage of the mechanical vocations is offset by the dirt and grease which necessitate the

[1] *Research Bulletin* of the National Education Association, vol. 5, no. 4, 211 pp. (September, 1927.)

wearing of unattractive clothes. It is a poor policy, however, to decide one's vocation on the basis of the kind of clothes one has to wear while at work. The first thought should be to find the vocation in which you can make the best use of your native abilities, and where you will be able to render the highest type of service of which you are capable.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Does the funny strip "Smitty" give a fair idea of the duties of the average office boy?
2. Try to secure permission to watch the shipping and billing clerks in a large department store at work.
3. Make an invoice of all your personal possessions; then see if what you did in making out the list corresponds with what the invoice clerk does in taking account of stock.
4. Which of the clerical vocations are filled by women and girl workers, for the most part, and which by men and boy workers?
5. If the average age of persons entering non-recording positions is fourteen to seventeen years; of those entering recording positions sixteen to nineteen years; and of those entering bookkeeping and stenographic positions eighteen to twenty-four years, what length of school training should those have who go into each of these various business vocations?
6. If every business house has its own particular methods of keeping books, what is the use of taking a bookkeeping course in high school or business college?
7. Less than five per cent of stenographers are also expected to do bookkeeping. Does your high-school commercial department require both bookkeeping and stenography of commercial students?
8. If there is a certified public accountant in your town, try to have him give a talk before your class in vocations. If he cannot do this, have some member of the class interview him, and make a report of the interview to the class.
9. Does your commercial department have up-to-date office equipment: filing cases, mimeograph, multigraph, addressograph, adding machines, bookkeeping machines, tabulating and calculating machines?
10. How do you account for the fact that there are eleven women

stenographers to every man stenographer? Is it worth while for boys to study stenography?

11. If mechanical workers earn more on the average than clerical workers, is not the wearing of a white collar while at work a rather expensive luxury?

SELECTED REFERENCES

1. Adams, Elizabeth Kemper: *Women Professional Workers.*
2. Filene, Catherine: *Careers for Women,* 444–60 (secretarial work).
3. Fryer, Douglas: *Vocational Self-Guidance,* 240–49 (accountancy); 319–41 (women in the business professions).
4. Hatcher, O. Latham, editor: *Occupations for Women,* 120–28 (accounting); 187–213 (office and secretarial work).
5. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations,* 161–67 (accounting); 226–31 (secretarial service).
6. Johnson, Edith: *Women of the Business World.*
7. Leuck, M. S.: *Fields of Work for Women,* chapter VI ("Office Work").
8. Milwaukee Vocational School Series: *My Life Work.* Monographs in Office Occupations Series: (1) "The Office Boy"; (2) "Office and Clerical Workers"; (3) "Accounting Occupations"; (4) "Office Machine Operators"; (5) "Secretarial Workers."
9. Platt and Farnham: *The Book of Opportunities,* 212–14 (bookkeeping); 220–21 (secretarial work); 222–26 (clerical).
10. Stanford University Bulletin: *Vocational Information,* 38–42 (accountancy); 68–72 (private secretary).

CHAPTER XV

BUSINESS VOCATIONS INVOLVING SALES SERVICE

1. *Types of service*

Trade, and those who conduct it. In the *Reports* of the United States Census Bureau, all the gainful workers are assembled in nine groups. One of these groups is called Trade, and includes bankers, clerks in stores, commercial travelers, retail dealers, salesmen, and saleswomen. We are also accustomed to speak of the mechanical trades, or of learning a trade. Trade in the first instance means barter or exchange of goods, while in the second sense it means a skilled mechanical process. The confusion in terms explains our use in this book of the term "Business Vocations" to cover both of what the Census Bureau calls clerical vocations and trade. In the last chapter we described the clerical vocations as including those clerical workers in stores who attend to the non-recording and recording duties but who do not come in contact with customers as salespeople. In this chapter we shall discuss the business vocations involving sales service.

In primitive stages of society a man made or produced something, and, if he had more of that product than he needed for his own or his family's use, he found some one who had something he wanted and traded or bartered his surplus goods for the surplus goods of his neighbor. He was both the manufacturer and the salesman, and he also attended to the problems of transportation himself. In modern industrial society production on farms and in factories is carried on in such a complicated manner that there must be what is called the middleman, that is, the man who attends to the selling or exchange of goods. The salesman, or "store-man," now buys the goods from the farmer or manufacturer, and resells it to persons who want that kind of commodity. The middleman makes his living by reselling the goods which he buys from the manufacturer

or producer, at more than he pays, that is, at a profit. It will not be possible to describe all of the business vocations involving sales service, but a few of the larger groups can be treated in such a way as to give a fairly good idea of the general field.

Wholesalers, importers, commission men, and coöperative sales organizations. *Wholesale dealers* are usually located in large cities. They assemble great stocks of goods, usually of a single commodity or type of goods, and distribute them to the retail dealers in their territory. The wholesaler must try to discover how much his territory can absorb of the commodity which he handles. He must also take steps to increase the demand. The salesperson in the wholesale store must know the retail dealers in his territory, and must seek to meet their needs both as to variety and quality of stock, as well as in quantity. He must also be able to assist the retailer in demonstrating new sales methods and devices. The better the retail dealer is satisfied, and the more goods he sells, the better it is for the wholesaler. Mail order houses do a retail business in a wholesale way, using catalogues and advertising to take the place of traveling salesmen. In this way they reach a large constituency and do a great volume of business every year.

Importers and *exporters* are wholesale merchants who deal in goods from other countries, or in sending goods to other countries. The exporter must know how to provide for the special likes and dislikes of his foreign customers. American manufacturers are said to be too well satisfied with the way they make things, and not as ready as European manufacturers to change their products to suit the demands of the foreign market. This attitude makes it difficult for American exporters to open up new fields. The economies of mass production, however, give the American exporter an advantage in prices, hence our foreign trade has been expanding at a striking rate since the World War.

Commission men. Commission men handle wholesale lots of goods, or agricultural products, on commission. The ordinary wholesale merchant buys outright from the manufacturer

or the producer. The commission merchant simply acts as a sales agent, charging a commission for his services. Losses incurred in transportation, or on account of the perishable nature of the goods, must be borne by the producer. Before the days of the cold-storage warehouses, farmers and truck gardeners suffered heavy losses because fruit, meat, and vegetables would spoil before they could be sold. Now these products are shipped in refrigerator cars and kept in cold-storage warehouses until a market can be found.

Coöperative sales organizations. Coöperative sales organizations are becoming very common among farmers and fruit-growers. Groups of growers of oranges, grapes, apples, prunes, or grain get together, and form an organization to market their products. They lease or build warehouses, cold-storage plants, or packing plants. They hire expert graders and packers. They standardize or grade their products, and carry on advertising campaigns. Crops are not dumped upon the market, but are parceled out according to demand. Much of the middleman's profit thus goes directly to the grower and producer. Such organizations are difficult to maintain because farmers are naturally individualists, and need to be trained to coöperate, but American farmers are beginning to learn that it is not much use to raise crops unless you can market them at a price above cost of production. The coöperative selling agencies have pointed the way to better business methods in marketing farm products, and probably under governmental guidance and encouragement they will continue to increase in number and in favor with the farmers and the public.

The traveling salesman. The representative of the wholesale house is usually the traveling salesman. He goes from place to place with his trunks or cases of samples. He covers a certain territory for his house, visits all the retailers who handle the kind of goods which he is selling, and takes their orders. He must know not only his line, as his goods are called, but he must know his retail dealers. He studies their needs, advises them in matters of advertising, and tries in every way to serve

them. This service he offers because he wants to keep them as customers, and in keeping customers honesty and fair dealing is the best sales policy. The traveling salesman is usually paid a flat salary and a percentage of his sales, so that his income is somewhat dependent upon his success. The wholesale house keeps a chart of the sales record of its many traveling salesmen, and those who fall below a certain standard have to give way to more competent representatives.

Canvassers. This type of traveling salesperson spends considerable time in a given territory. Instead of selling to stores, the canvasser sells directly to individuals. Books — especially sets of books, such as encyclopedias, the complete work of great authors, and many-volumed histories — are sold by canvassers who go from house to house. Newspaper and magazine subscriptions are also secured by canvassers, or subscription agents as they are sometimes called. Some great industries have been built up almost entirely through the canvassing method of disposing of products. This is especially true of the aluminum trade in kitchen utensils, and in various other inventions for household use. High-school and college students often earn money toward school expenses by work as canvassers. It is excellent practice in salesmanship, but before signing up to do canvassing, be sure that the firm for which you work is reliable and will live up to its part of the agreement. This precaution should be particularly observed when a deposit of money is demanded to cover the canvasser's outfit and preliminary instruction.

Salesmen in foreign trade. The most attractive type of traveling salesmanship is that connected with foreign trade. These salesmen represent their firms in the foreign markets. This field of salesmanship requires the most severe preliminary training. A foreign salesman must not only know history, geography, and international politics, but must be a master of the language of the foreign country in which he is serving. He must know the customs and peculiar tastes of the people to whom he is trying to sell his goods, and must be tactful and

diplomatic in his dealings. He is more than a salesman, he is a kind of foreign representative of his country, and he must learn to coöperate with the government's consular agents in developing harmonious trade relations. The disadvantages connected with foreign trade have to do with living in a foreign land, away from home surroundings and educational advantages for one's children, and in getting out of touch with conditions in the home field.

The buyer. The buyer is the reverse of the traveling salesman. He travels from the retail store to the big wholesale or distributing center, and picks out the desired goods for his firm. In one sense he has reduced materially the field of the traveling salesman. The advantage of sending a buyer to select stock is that he knows the home trade because he is constantly in touch with it, and is not therefore likely to buy something for which there is no demand in his territory. He also has the opportunity to come into personal touch with the manufacturing methods and business ideas of the firm with which he is dealing. Practically all of the selection of goods for the large city department stores is done by buyers who represent the various departments. The skill and good judgment of the buyer has much to do with the financial success of his firm, hence he has become one of the most important links in the business chain.

Retail dealers and proprietors. The most numerous group of people engaged in selling are those who own or have a considerable interest in the business in which they are engaged. The census mentions fifty different kinds of retail dealers and proprietors, with a total number of nearly 1,500,000 persons. These include the butchers, the bakers, the candlestick makers, and every other type of dealer that you could think of. The greatest number of retail stores deal in food products, such as groceries, meat, and vegetables. Next in order come the dealers in dry goods and clothing of all sorts, then dealers in drugs and medicines, then confectioners, cigar and tobacco dealers, and so on down to dealers in antiques and curios.

A proprietor of a retail store should have had some training in business as a salesman, clerk, or other employee, and also he should have accumulated some capital with which to buy a stock of goods, rent and furnish a store, and hire necessary clerical help and salespersons. Such a person must be well enough known in the community to have some credit with the banks or wholesale houses of the district. The proprietor of a business must have a reputation not only as a good salesman and manager; he must also have a reputation for honesty and promptness in meeting his financial obligations.

It is said that a great majority of those who enter business for themselves fail. If this statement is true, it is very important for the person who thinks of starting a business of his own to make a thorough study of the situation before risking his savings in a business enterprise. Competition is very keen. Big department stores and chain stores specializing in groceries, meats, drugs, and every other commodity make it difficult for the person with a small amount of capital to give the kind of service which the public demands. Many failures in the small retail business would have been averted if the proprietor had been trained in budgeting, credit, buying, and store organization and management. There is still a place for the small dealer, but he needs training to become a specialist in cultivating his field and in serving his customers in order to hold his own in the business world to-day.

Salespersons in stores. Every type of retail store described in the preceding paragraph, unless it is very small, employs one or more salespersons in addition to the owner or proprietor. Large stores, such as department stores in the cities, employ hundreds of salesmen and saleswomen. Each department in such a store is equivalent to a large store in itself, with its own buyer, manager, head-salesman, and so on, and with its sales record to maintain.

Among retail owners and proprietors only one in twenty is a woman, but among salespeople in stores, every third person is a woman. In grocery stores, meat shops, hardware and imple-

ment stores, and wherever salesmanship involves handling heavy commodities, the clerks are usually men. In drygoods, candy and confectionery, millinery, and other stores where the commodities are light, or pertain to articles in which women are most likely to be interested, the salespersons to a large extent are women.

The salesman. This type of employee is an important factor in business. He displays the goods to best advantage. He knows the merits of the articles offered for sale, and is able to inform the prospective buyer about them. He studies the needs and whims of his customers in order to satisfy their wants. Haggling over prices and seeking to get the better of the bargain characterizes buying and selling in Oriental, as well as in some European countries. In America, where prices are fixed and standardized, the slogan of the merchant generally is: "A satisfied customer," or "The customer is always right." The idea in this country is to increase the total number of purchases by anticipating the customer's need, and by giving him the highest possible value for his money. The chief business of the salesman, therefore, is to see that the goods are fairly and adequately represented, and that the purchaser is both served and satisfied. Salesmanship is rapidly becoming a science, as well as an art, and with definite rules and principles which must be mastered by those who become adept at the business.

The advertiser. One of the biggest problems of the business man is how to let people know that he has certain articles for sale. The solving of this problem usually involves advertising. In order to get business it is necessary to display goods in an attractive manner, in windows or on counters or shelves, and also to write advertisements that will attract attention. Merchants spend millions of dollars every year in advertising, and consider that it is just as necessary as to have goods to sell. Advertising is just another kind of salesmanship. When well done it greatly simplifies the salesman's work, as well as makes more work for the salesman to do.

There are many different ways to advertise. Take the daily newspaper and count the columns of news, editorial, and pictorial matter, and then count the columns of advertising matter, as the writer has just done. In a great city daily newspaper having 28 pages, with 8 columns to the page, there were 90 columns of display and classified advertisements, and 134 columns of news. Forty per cent of the space was taken by advertising matter. In one of the most popular weekly papers, which is said to have a circulation of over 3,000,000 copies, 93 pages of advertising out of a total of 160 pages were found. If advertising costs $1000 per page in this weekly paper, business men spend about $100,000 per week, or over $5,000,000 per year, for advertising their goods in this one weekly periodical.

SOLICITING HIS FIRST ADVERTISEMENT

Every important magazine and newspaper has a staff which devotes its entire time to the advertising section. Every large business has its advertising writer or advertising department. Some firms devote all their energies to specializing in advertising, and take contracts to furnish the advertising that is best

adapted to the needs and the patrons of a given business. There is a national association of advertising men, and they insist upon truth as the greatest necessity in the writing of advertisements. They know from experience that only the truthful statement will establish the confidence of the general public in their work. It is the advertisement writer who is able to state the truth about his goods in the most interesting, original, and striking way who brings in the business for his employer and earns a good income and rapid promotion for himself.

2. *Opportunities, training, and income*

Numbers engaged. Something like 3,500,000 persons are engaged in business vocations involving salesmanship. Opportunities in this field range all the way from that of selling newspapers on the street to that of the salesmanager of a great department store, or from that of the proprietor of a small fruit stand to that of the proprietor of a great wholesale business. There were, in 1920, more retail dealers (1,328,000) than there were salesmen and saleswomen (1,177,000). This means that approximately half of those engaged in selling things are selling things which they own, or in which they have a certain amount of money invested. They probably worked for some one else at first, saved enough money to make a start, and then set up in business for themselves. One cannot do this without some capital, and there is always the risk that keen competition, unfavorable business conditions, or one's own lack of business ability may result in the loss of all the money one has invested in the enterprise. There is a fascination, however, about being one's own boss, and also a chance that the venture will prove successful and grow into a large business. The element of adventure attracts the ambitious person and induces him to take the risk. "Nothing venture, nothing have," is the motto of the embryo business man. On the other hand, there are almost as many who prefer to sell goods for a salary, or on commission, and let the proprietor worry about making ends meet.

Here the only capital necessary is skill and experience, or a desire to become a competent salesperson, coupled with aptitude and a willingness to learn.

Training. The best training for salesmanship is found in stores, under the direction of an experienced person. There are, however, good courses in salesmanship offered in high schools and business colleges. If such a course is taken at the time one is having actual selling experience, it is much more valuable than when it is studied on a purely theoretical basis.

The person who plans to become a proprietor needs to know more than just salesmanship. He should be familiar with bookkeeping, accounting, business management, and the principles of economics that are most closely related to business enterprises. Knowledge of these special subjects can be acquired by reading and experience, by attending night school, or by attending schools of business in colleges and universities. No amount of study, however, can take the place of actual business experience, and even the person who graduates from a university school of business must be willing to start at the bottom and learn the business from the ground up. The college-trained man may go farther in the end, but he cannot escape the discipline of acquiring his most valuable training in the "university of hard knocks."

Income. The income that one may expect in business proprietorship and salesmanship ranges all the way from a few dollars per week to many thousands of dollars per year. The salesperson in a retail store will average from $20 to $60 per week, while the expert specialty salesman often earns as high as $100 per week. Traveling salesmen earn from $2000 to $5000 per year, and individuals among them earn incomes much greater. Foreign representatives of large business houses earn from $4000 to $20,000 per year. The latter salary, or income, is generally earned only by the salesmanager for some entire country or large area. Copy writers for various kinds of advertisements start at from $15 to $25 per week. Advertising managers receive from $2500 to $10,000 per year.

Disadvantages. Among the disadvantages of the business vocations involving sales service may be mentioned the fact that nearly all such vocations are inside, or indoor pursuits. Canvassers and traveling salesmen are not confined to a certain store, but business men and salespersons generally complain of the confining nature of their work. Salaries, on the average, are not as good as in the mechanical and industrial vocations, but there is the stimulus of meeting new people every day, and the conditions surrounding the worker are likely to be more pleasant than in shops and factories. The small amount of preliminary training required tends to overcrowd the lower levels of employment and keep salaries low. This condition also makes promotion slow and hard to earn. The business ladder is one of the easiest to start on, but one of the most difficult on which to climb to the higher positions and incomes. Success demands ability, persistence, and a spirit of service.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Is a mail-order house a wholesale or a retail establishment?
2. If you live in a town of less than 5000 people, make a list of the different kinds of stores, shops, and stands where things are offered for sale.
3. If you live in a city which has a Chamber of Commerce, ask the secretary for some of the leaflets which are usually sent to people who think of moving to the city. See how many different kinds of "selling business houses" are mentioned.
4. Seek an opportunity to talk with a clerk in a dry-goods store. Find out all you can about her duties. Ask her to tell you the things she likes most, and the things she likes least about her work.
5. Talk to a farmer, and find out how he sells or markets the things he grows. Does he bring them to the public market and sell them himself? Does he peddle them around from house to house? Does he belong to a coöperative selling organization? Does he send them to a commission merchant?
6. If you know a man who is a traveling salesman, ask him to tell you about his work. What kind of goods does he handle? Does he draw a regular salary, or work on a commission? What are the unpleasant as well as the pleasant features of the work?

7. See if you can find out how much capital you would need to start a boot and shoe shop; a grocery store; a news stand.
8. If it costs twenty cents a line for want ads in a large daily paper, find out how much all the classified ads in the daily paper which comes to your home amount to for a single day.
9. How do you account for the fact that there are ten times as many women who are stenographers and typists as there are men, while there are two and one half times as many men as there are women engaged in selling, and fifteen times as many men as women who are retail dealers?
10. If you were ambitious to become a salesman in foreign trade, what training would you have to have? How would you probably have to begin? Where would you prefer to go?
11. Is the best salesman always the one who sells the most goods?
12. Debate the question: Resolved that, it is better to become a good salesman for some well-established firm than to start in business on one's own account.
13. Does advertising raise the standard of living by encouraging more people to buy goods?

SELECTED REFERENCES

1. Allen, F. J.: *Advertising as a Vocation.*
2. Allen, F. J.: *Business Employments,* Part II, on "The Modern Retail Trade."
3. Filene, Catherine: *Careers for Women,* 82–110 (business).
4. French, George: *Twentieth Century Advertising.*
5. Fryer, Douglas: *Vocational Self-Guidance,* 170–80 (salesmanship); 202–08 (merchandising).
6. Hatcher, O. Latham, editor: *Occupations for Women,* 129–38 (advertising); 149–64 (department store field).
7. Hirth, Emma C., editor: *Training for the Professions and Allied Occupations,* 168–76 (advertising); 189–95 (commerce).
8. Milwaukee Vocational School Series: *My Life Work.* Monographs on: (1) "The Retail Grocer"; (2) "The Retail Meat Dealer"; (3) "The Department Store Vocations."
9. Platt and Farnham: *The Book of Opportunities,* 195–211 (merchandising); 215–19 (advertising).
10. Stanford University Bulletin: *Vocational Information,* 43–44 (advertising); 46–48 (employment management); 49–52 (insurance); 64–67 (retail selling).

CHAPTER XVI

BUSINESS VOCATIONS INVOLVING BANKING, BROKERAGE, AND EXCHANGE

1. *Nature of the work*

Wide extent of credit and credit paper. Less than ten per cent of the world's business is done on a cash basis — all the rest is done on a credit basis. That is to say, people buy commodities and give written promises to pay, which are called notes, or bills of exchange. When they buy lands or houses they give notes or mortgages. Thus, the grocer buys a stock of groceries from the wholesale house, pays a part of the cost in cash, and gives his note for the balance, payable in thirty, sixty, or ninety days. He, in turn, sells the goods at retail and collects from his customers the money with which to take up his notes to the wholesale house. On account of this credit he is able to have on hand a much larger stock of goods, and to do a much larger volume of business, than would be the case if he had to pay cash. If the grocer meets his obligations to the wholesaler on time, he establishes what is known as good credit. When the credit of the retail grocer is established the wholesaler is able to take his note to the bank and discount it — that is, sell it for a little less than its face value. The bank carries the retailer's note and the wholesale house in turn is able to enlarge its stock and extend credit to other customers.

A farmer takes his wheat to a warehouse, and gets a receipt showing that he has so many thousand bushels of grain delivered to the warehouse. He needs money to pay his laborers for harvesting and threshing his grain. He goes to the bank and borrows money on his grain receipts to tide him over until the grain is sold to the flour mill or the grain dealer. He pays the bank interest for this accommodation. He has simply rented the money for a short time until his grain is sold.

Importance of the banking and brokerage vocations. Almost every kind of business transaction involves banking, brokerage, or exchange, and the vocations which have grown out of this phase of modern business have come to be the most vital of all business vocations. When business men pay their obligations promptly to each other and to the banks it is because their customers are paying their monthly bills promptly. When employment is scarce, however, customers cannot pay their bills, the retailer cannot pay the wholesaler, and the wholesaler cannot pay the bank. This causes the bank to draw in its existing loans, and to become very conservative in making new loans. Money becomes what is called tight, and every kind of business suffers.

It is because credit is the very life blood of modern business that credit-giving, money-loaning institutions are very carefully supervised by State and Federal Governments, and compelled to observe certain regulations about length of loans, character of securities which they may take, liabilities of stockholders, and other safeguards of the public. Brokerage houses, stock exchanges, and banks have to comply with certain laws in order to do business at all. What some of these institutions do, and the kinds of service performed by them, will be briefly described in this chapter.

Banking. A bank is a business house which provides a safe place where money, important papers, and other valuables may be deposited. It also loans money on notes or other security, handles bonds, deals in exchange, and otherwise acts as a fiscal agent for its customers. A bank in which thousands of people deposit small as well as large amounts is enabled to loan this money out at interest to those in need of credit for business purposes. The bank, however, always keeps a sufficient amount of cash on hand to meet the daily needs of its depositors. It also keeps a large percentage of its resources invested in government bonds, or other securities which pay a small interest, and which on emergencies are quickly convertible into cash.

There are four main types of banks — commercial banks, savings banks, trust companies with banking departments, and investment banks. Workers usually found in banks include the president, one or more vice-presidents, cashier, assistant cashier, and various tellers and clerical workers. There are also the auditor, treasurer, and secretary of trust companies, and various heads of departments. The cashier usually has administrative charge of the bank, signs checks and drafts, and receives applications for loans. The auditor is the director of accounting, verifies all reports, and keeps the board of directors informed regarding the financial condition, as well as the efficiency of the various departments. The paying and receiving tellers take in and pay out money to the bank's customers. The paying teller must know the customers of the bank, and be able quickly to detect attempted frauds in worthless checks, and

INTERIOR OF LARGE METROPOLITAN BANK

Showing customers consulting bank officials, making out checks, and standing in line for service at the tellers' windows. Note the bank guard in the foreground

counterfeit money of all sorts. Then there are the note tellers, discount tellers, head bookkeeper, and in many banks several assistant bookkeepers and the chief clerk, who is sometimes the personnel manager. If there are savings and safety deposit departments, these will have appropriate personnel.

Since banks provide the bulk of the credit upon which business is done in a community, the banker must have an intimate knowledge of a great many different kinds of business. He must be a keen judge of human nature, and generally conservative because he is not only the custodian of the people's money, but also of the community's progress and prosperity. He cannot afford to be miserly and narrow, however, because there is a certain element of adventure in every business, and only the man who has some daring and optimism can render the largest service. A narrow-minded banker can restrict the development of a community by not discriminating between persons and enterprises that are worthy of financial backing, and those which have little chance of success. The banker occupies a position of great power, and he should perform his duties as a public trust.

The broker. Brokers are agents who act as go-betweens for buyers and sellers. They do not own the goods, commodities, or services which they sell, but they enter into contracts with persons having various things to sell and undertake to find buyers. They work on commission; that is, they take as their pay a part of the price secured for the thing sold. Brokers deal in stocks and bonds, insurance, real estate, grain, live stock, and so forth, and act as agents to secure employment for those seeking positions; they always collect a fee of some sort for their services.

Stocks and bonds. A bond is an evidence of indebtedness, like a mortgage. Governments finance their great enterprises, such as public works in times of peace, and army and navy supplies in times of war, by issuing bonds. States, cities, and some school districts do the same. These bonds are secured by all the assets of the Government or other agency back of them.

Stocks are evidences of part ownership in an enterprise, and are issued to those who have helped to provide the money necessary to start or carry on the business. While a bond just draws interest at a given rate, and is paid off at a stated time as a note or mortgage might be, a stock certificate does not bear interest, but entitles one to a share in the profits of the business — if there are any. It also makes one liable to certain assessments for losses in case the business does not succeed. The bond has the greater element of security, while the stock is more uncertain and represents larger hazards, as well as greater opportunities for large gains.

When a government, a city, a school district, or a railroad issues bonds to raise money for improvements or expansion, it does not try to sell those bonds itself, but turns them over to banks or brokerage firms. These firms undertake to find customers for the bonds. These brokers charge both the seller and the buyer a small fee for their services. The same thing is done when a business enterprise issues stock to get money for its establishment or enlargement. Sometimes the broker receives a fee, and sometimes he receives a block of promotion stock, which may become valuable if the enterprise succeeds.

It is in connection with stocks that what is known as stock gambling takes place. Stocks of new and uncertain enterprises, especially mining, oil, and rubber-company stocks, are sold at a very low figure, with glowing accounts of the chances to make a fortune or get rich quick when gold is found or oil is struck. It is estimated that nearly a billion dollars a year are literally thrown away by the American people through wildcat investments in worthless stocks. Brokers, dealing in worthless stocks, use every sort of device to lure unwary people into their nets. They succeed in doing this, year after year, because human beings seem to be born with a desire to get something for nothing. As we understand economic laws better, we know that the greater the promise of profit the smaller the chance of security.

Brokers in legitimate stocks and bonds try to protect their

clients by giving them sound advice. They build up their business on a basis of confidence in their good judgment and integrity. There are always such brokers in a community, and no person of small means should buy stocks or bonds without consulting a banker or a reliable broker.

The insurance broker. Insurance companies are business concerns which collect small sums from many thousands of individuals on the written promise to pay losses which the insured may incur on account of accident, fire, theft, unfaithfulness of employees, or other causes. The sum paid for protection is called the "premium," and the promise to pay is called a "policy." The rates are based on the risk or hazard involved in the case of loss by fire, theft, and so forth, and in the case of life insurance the rate is based on the age of the insured or his expectancy of life. Insurance is a device of modern society whereby many persons contribute to reimburse those among the contributors who suffer losses which are covered by the various types of policies issued. Those who sell insurance, or persuade people to join these coöperative associations, are called insurance brokers, or agents. They receive a considerable part of the first premium for their selling service, and usually a small part of each succeeding premium. Sometimes, when they have become expert in the business, they receive bonuses for all the insurance over a given amount which they sell in a year.

Life and casualty insurance. Policies of life and casualty insurance amounting to $70,000,000,000 have been written in this country, and there are some three hundred legal reserve companies, and in addition to this there are many fraternal orders maintaining assessment insurance for their members. It requires a large army of employees to take care of the insurance business, and if the company represented has adequate resources to meet all promises and obligations, the work is both pleasant and remunerative to the agent with selling ability. Life insurance is one of the surest means of leaving an estate for one's dependents. Endowment policies mature

in from ten to twenty years, coming back to the insured in the form of savings. Casualty insurance covers sickness and accidents, and makes provision for partial or total disability.

Fire insurance. Fire insurance protects the insured against loss by fire. A considerable portion of the value of houses, wharves, business houses, schools, and churches is usually covered by fire insurance. Nearly $120,000,000,000 worth of fire insurance was outstanding in 1927, out of which a part of the $500,000,000 fire loss for that year was paid. Not every one who lost property by fire during that year had his loss covered by insurance, but the insurance habit is becoming almost universal, hence the insurance broker has a great deal of business which comes to him unsolicited. This helps to give him a steady income while he is looking for new business.

Fidelity insurance. Fidelity insurance is a kind of insurance which certain companies write guaranteeing to make good to banks, trusts, and various public and private institutions, their losses through the embezzlement or other misuse of funds by their employees. In some cases the employee pays the premium, in others the company pays it.

Employer's liability insurance. Employer's liability insurance is carried by contractors and manufacturers, and other employers of labor, to protect them from loss through injury sustained by any of their employees while working in their factory, or on buildings, or bridges. In many States such insurance is compulsory, part of the premium being paid by the employer and part by the employees.

In addition to the above kinds of insurance, there are also title insurance companies, which investigate and guarantee titles to land; marine insurance companies, which insure goods and ships while on the ocean; and companies which insure growing crops from fire and flood, and even insure the attendance at a baseball game or a concert, or a singer's voice or a piano player's fingers.

The real-estate broker. The real-estate broker, or realtor, as he now prefers to be called, acts as agent between buyers and

sellers of land. He also attends to the renting and leasing of houses, business places, farms, and orchards, and often acts as an appraiser of land and other property values for courts, estates, banks, and investment companies. His income is based on commissions, and his success depends upon his knowledge of land values, ability to foresee trends of development, and skill in leading people to see the opportunities in a real-estate venture which he himself sees.

In and near growing cities one of the most extensive real-estate specialties is that of buying tracts of land and subdividing them into home sites or lots. This development usually involves a heavy initial investment in street, sewer, sidewalk, and other improvements, and can be carried out only by companies with considerable capital.

Real-estate dealings have so many elements of large profit, as well as loss, that they frequently take their place beside oil and mining stocks as a means of swindling the public. Whenever there is very rapid growth in any section of the country there is a tendency on the part of real-estate brokers to "boom" that section, by publishing stories of fabulous sums made in the buying and selling of land. Buying is stimulated, people rush in expecting to make fortunes very quickly, but soon the boom collapses, and the final purchasers of the lots suffer heavy loss. Speculation in real estate is just as risky as speculation in oil and mining stock, with the added disadvantage that one usually has to pay taxes for a long time on his "dead" real-estate investment.

The best realtors, like the best stock and bond brokers, try to hold down or prevent boom conditions. They try to serve both parties to a sale so that each will consider the service worth the commission, and trust them later with other selling or buying assignments.

The employment broker. The employment broker seeks to find jobs for idle workers, and to find workers for busy manufacturers, contractors, or other employers of labor. Sometimes a registration fee is charged, and then a percentage of the

first month's or the first year's salary. Sometimes there is no fee unless a position is secured. Bonuses are sometimes paid by employers, and no fee charged to the workers.

A rather frequent form of employment brokerage is represented by teachers' agencies. Some such agencies have branches in every State, and undertake to find teachers for schools, or school positions for teachers. The teacher usually pays a part of her first year's salary as a brokerage fee, giving her note for the amount when the contract is signed. Nearly all colleges and universities now maintain appointment secretaries, whose function is to find positions for the graduates of that institution. These services are rendered at very small cost.

Free employment agencies often are maintained by cities and States, and by the United States Bureau of Labor. In this way the abuses of the commercial employment agencies have been reduced, and many thousands of needy workers are helped annually to find employment.

2. *Training, opportunities, and income*

Numbers engaged. There were in the United States, in 1920, some 85,000 bankers and bank officials, of whom 5000 were women. With the tremendous increase in the volume of business during the past seven years, which has resulted in the United States becoming the financial center of the world, it is safe to say that there has been a fifty per cent increase in this number. There was a 47 per cent increase between 1910 and 1920.

Executive positions. Training for executive positions in banks is coming to demand a college education, but there is much that a banker needs to know which cannot be learned in a college. This knowledge can only be secured in the bank itself by starting in one of the subordinate positions and securing first-hand experience. The American Institute of Banking, through its educational section, offers a carefully planned training course which can be taken by correspondence, and through classes conducted under the auspices of the various

chapters of the Institute, located in the principal cities. During the college course, a person interested in banking should specialize in economics, political science, accounting, finance, and statistics, in addition to the regular Liberal Arts subjects.

Bank clerks. In the beginning positions, bank clerks receive from $1000 to $1800. Experienced clerks and minor officials receive from $2000 to $3600. Cashiers receive from $3000 to $7500. Bank presidents receive from $5000 to $10,000 in medium-sized cities, and up to $50,000 in the largest cities. Among the twelve Federal Reserve Banks, the lowest salary of a chairman of a board of governors was found to be $7500, and the highest $30,000.

Promotion is slow in the banking business, and the higher positions are usually held by persons who have made considerable investments in the capital stock of the institution. The amount of capital required depends on the size of the bank. Banking as a field for women is improving yearly. The number of women engaged in this vocation increased by about 150 per cent between 1910 and 1920. Women have attained to positions of distinction in the profession, and have demonstrated their adaptability to the demands of modern banking institutions.

Number of brokers. There were about 80,000 bond, stock, commercial, and other brokers, in 1920, only about 1000 of whom were women. The field of brokerage is especially attractive to young men because they do not have to own the stocks and bonds, but simply act as salesmen. Since, however, the bond salesman deals with mature and successful business men, he must be prepared to meet them and deal with them on a plane of understanding and sincerity. Much the same basic training is desirable as for the banking business, with emphasis upon economics, accounting, finance, and statistics, as well as psychology, salesmanship, stocks, and bonds. Stock and bond brokers must have the qualifications of the salesman, plus the judgment and executive ability of the banker, since they are called upon for advice regarding the investment of large sums

of money, and must give first consideration to the safety of their client's funds.

Bond salesmen. The bond salesman usually receives a salary, plus commissions. Investment brokers work almost entirely on commissions, and in addition have considerable capital of their own to use in handling large deals. Where there is a stock exchange successful brokers must own a seat, and these often cost large sums of money. Only those owning seats can trade on the floor of the exchange, and hence these few have a great advantage. The element of chance involved in playing the stock market appeals to many young men, but they quickly find that successful stock-brokerage is an intricate business requiring severe training and experience.

Insurance selling. Selling insurance differs from stock and bond selling in that the insurance agent tries to persuade a person to protect himself and his dependents by carrying adequate life, fire, or accident insurance. There is no chance to get rich quick, nor to make unusual profits, but the contract which such an agent offers is backed by great resources and the benefits are certain. The element of risk is also reduced to a minimum. Since salesmanship is involved, the worker should have training along that line, and a good liberal education. He should also believe in his vocation as a genuine field of social service. Many of the large insurance companies hold institutes for the training of insurance salesmen and other workers. The great value of this training is that it is given with practical experience in selling.

Income. In the insurance business the income is dependent almost entirely upon the skill and enterprise of the salesman. Some underwriters devote only part of their time to that work. Those who give all their time to the work frequently are able to build up a solid and remunerative business.

There were 135,000 insurance agents and insurance company officials, in 1920, of whom 5000 were women. This represented a gain of 38 per cent in the number of workers, during the period between 1910 and 1920. Since the amount of life in-

surance in force in 1920 was $44,000,000,000, and in 1925, $71,000,000,000, an increase of $27,000,000,000 in five years, it stands to reason that the number of persons engaged in the insurance business has also greatly increased. A conservative estimate would be that there are 150,000 persons in this business at the present time.

Real-estate brokers. Real-estate brokers outnumber insurance brokers, and there are more women in this branch of brokerage salesmanship. In 1920, there were 150,000 persons engaged in selling real estate, of whom 10,000 were women. The number of men increased, however, only 11 per cent, while the number of women engaged increased 220 per cent between 1910 and 1920. This is evidently a vocation in which women are finding a new field for successful vocational effort.

Realty values increased nearly 100 per cent in this country, between 1910 and 1925, and this fact has influenced many persons to change their vocation and become realtors. A realtor should have a good general education, with emphasis upon economics, geography, geology, taxation, finance, law relating to titles, leases, mortgages, and other business subjects. There should also be emphasis upon English, both oral and written.

Income. A realtor's income is quite likely to be irregular since it depends on commissions, and there are frequently dull seasons when sales are few and commissions small. Real-estate men often carry a side line of fire insurance, and maintain renting and leasing lists. It is always a good plan to start as an employee of an established real-estate firm, both to learn the business thoroughly and also to accumulate some capital with which to carry on a few transactions on one's own account.

Advantages and disadvantages. The most serious disadvantage of real-estate selling is that the vocation is so easy to enter that it is always overcrowded. Another drawback is the opportunity for fraudulent dealers to operate. Notwithstanding these disadvantages, there is abundant opportunity for the right sort of person to build up a substantial business. The National Association of Realtors is energetically engaged

in the task of driving unscrupulous dealers out of the field. Standards of efficiency, honesty, and service are being raised for the improvement of the vocation, as well as in the interest of the general public.

Taken as a whole, the business vocations involving banking, brokerage, and exchange represent the higher levels of the business employment. Something over 500,000 persons make their living in these fields. The general level of intelligence and education required is high. Possible incomes are also high, and average considerably above the office or clerical vocations. They compare best with the higher grades of salesmanship vocations, to which they are most closely related. There is more variety and physical activity than is found in store-selling vocations, and a wider scope of originality, initiative, and personality must be used in the achievement of results.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Does your school have a school bank? If so, get permission to watch the different school-bank officials at work. Perhaps you have a savings account in a regular bank. Take time, when you make your next deposit, to see just how things are done in this bank.
2. Find out all you can about the president of one of the banks in your town or city. How did he get his start? Did he work up through the various positions in the bank, or did he earn his money in some other business and then take up banking?
3. Examine the daily paper, and find out how much space is given to financial items, that is, stock and bond quotations, and financial articles. Read some of these articles to get an idea of the kind of advice the financial editor gives his readers.
4. Examine the type of advertisements which real-estate agents put in the Sunday papers. See if you can discover which ones are overstating their property attractions, and which are conservative.
5. Compare advertisements of insurance companies with those of promoters of oil and mining stocks. See if you can distinguish the different types of salesmanship involved.
6. If you needed a job, would you go to an employment broker or agent? Is the public employment agency as efficient in secur-

ing positions as the private agency? What is the reason for the difference, if any?

7. Work up, for presentation in class, a dramatization of the different kinds of selling involved in selling bonds, insurance, and real estate.
8. How does a person establish credit at the bank on which money can be borrowed?
9. How does it happen, when news of all kinds of fraud is published every day, that so many people are deceived by get-rich-quick schemes?
10. Which is better, to work for a fairly good regular salary, or to work on a commission or percentage basis?
11. If you were working in a bank, in one of the minor positions, and became engaged in buying and selling stocks on a margin, what do you suppose the president of the bank would think about it?
12. If you were a real-estate broker, and one of your customers wanted to buy a piece of land which you felt was not a safe investment, what would you do about it?

SELECTED REFERENCES

1. Filene, Catherine: *Careers for Women*, 270–72 (insurance).
2. Fryer, Douglas: *Vocational Self-Guidance*, 181–91 (real estate); 192–201 (insurance); 228–36 (banking).
3. Hatcher, O. Latham, editor: *Occupations for Women*, 139–48 (banking); 165–74 (insurance); 175–85 (real estate).
4. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 179–87 (banking); 211–15 (insurance); 217–20 (real estate).
5. Platt and Farnham: *The Book of Opportunities*, 178–87 (banking and investment); 187–91 (insurance); 191–95 (real estate).
6. Ripley, W. Z.: *Main Street and Wall Street*.
7. Rosengarten, Wm.: *Choosing Your Life-Work*, 117–21 (banking); 175–80 (insurance).
8. Spiker, John B.: *The Real Estate Business as a Profession*.
9. Stevenson, John: *Selling Life Insurance*.
10. Strong, Edward K., Jr.: *The Psychology of Selling Life Insurance*.
11. Stanford University Bulletin: *Vocational Information*, 44–46 (banking); 52–55 (insurance); 56–58 (investments); 62–64 (real estate).

CHAPTER XVII

ARTISTIC VOCATIONS REQUIRING ABILITY IN DESIGN

1. *Nature of the work*

Talent called for. The artistic vocations have grown out of man's desire to express himself in various ways. It is much easier to get a person's meaning if he uses his hands, or changes the expression of his face when he is talking. In addition to words and gestures, men express their thoughts and emotions in music, or by the use of such materials as paint, clay, stone, marble, wood, or bronze. When a person makes his living by expressing his emotions in pleasing and beautiful ways he is said to have an artistic vocation.

The person who is thinking of becoming an artist should make a very careful study of the matter before making up his mind. Great talent is called for, and a long, long period of training is necessary before results are achieved which bring recognition and a living income. Genius for design may be inherited, but even then unless it is carefully cultivated it does not bring satisfactory results.

When a person discovers that he has artistic skill he should cultivate the habit of thinking in terms of design, and practice expressing his ideas in the form of drawings, paintings, and models in clay, or other plastic material. He ought also to find, as soon as possible, the particular branch of art in which he has the greatest amount of ability. He should then become acquainted with persons engaged in that form of art, see them at work in their shops or studios, ask them questions, show them his own work, and ask for suggestions and criticisms. Nearly all adults are interested in the problems of young people. This makes it easy for those who think they have artistic talent to secure expert advice or friendly counsel. Below are given

a few of the things one should know in regard to one's own abilities, and the demands that will be made in the way of training for those who enter the artistic vocations.

The sculptor. The sculptor fashions the figures of men, or animals, or other objects in clay or plasticine. He first makes a small model in this plastic material, which he calls his sketch model. When this is as nearly perfect as he can make it he has it cast in plaster. A framework of boards and woven wire is then built up to resemble in size and general shape the statue that is to be made. The working model of the statue is then perfected by means of a device known as the pointing machine. A skilled mechanic does the pointing-up work, and while he is doing that the sculptor is free to work on other sketch models of statues for which he may have orders or commissions. When the working model has been mechanically reproduced from the sketch model the sculptor works on it again and gives it the final touches.

There is a pretty fiction that the sculptor sees the angel in the block of marble, and seizing his chisel and mallet proceeds to free the beautiful creature. That may have been the way Michelangelo made his statues, but the modern sculptor makes his sketch model and turns it over to skilled marble cutters for reproduction in "heroic" size. He then spends several months, working with his finest tools, in bringing out the refinements of form and expression.

The carver. The carver is a sculptor in wood, ivory, or soft metals. He has to have the hand skill of the sculptor, and even greater skill in the use of his carving tools. The sculptor can change his working model or his sketch model at will, because it is of moist clay. The carver makes a clay model, or he simply keeps his design in his head and executes it, to the finest detail, without making a slip. He must exercise great care, otherwise he would ruin costly ivory, or ebony, or other rare materials. Patience and devotion to the most minute items are required of the carver. Carving in any kind of material offers one of the most fascinating ways of spending leisure time, and the

expert finds opportunity to make a living carving designs on furniture, decorative panels, or jewelry.

The painter, mural decorator, and mosaic artist. Skill in drawing is necessary before one can become a painter of landscapes, portraits, animals, or other objects. The painter is an artist who uses oil paints or water colors in order to represent objects or scenes in their natural colors. The use of color tends to make the portrayal more realistic, but it requires great skill in the mixing and applying of the colors. Closely allied to the painter is the mural decorator and the mosaic artist.

ART POSTER WORK

The painter paints his pictures on canvas to be framed and hung on the walls of private homes or art galleries. *The mural decorator* paints his pictures on the walls of churches, libraries and other public buildings. *The mosaic artist* first paints his picture in water colors or oils, and then reproduces it, using small bits of colored glass set in cement, or he works out his designs in stained glass set in lead for church windows.

The artist who is painter, mural decorator, or mosaic artist must have all of the manual skill of the artisans who are house painters, paper hangers, or glaziers. In addition to this manual skill he must have creative imagination. He must be able to conceive original designs, to paint them in appropriate colors, and to make them stand out or live. The real artist is able

to put himself or something of his own spirit into his work. That is what distinguishes him from the skilled artisan.

The illustrator or cartoonist. Probably the most popular artistic vocation to-day is that of cartoonist, or illustrator. Comic strips and political cartoons are found in every city paper, and many of the big city papers have four to eight full sheets of such illustrations every Sunday. One reason for the interest that people take in this form of art is that ideas are more quickly gathered from pictures than from written pages. The illustrator or cartoonist uses crayons, pen and ink, or water colors in preparing his pictures. These are reproduced by the photographic process and made ready for the press. When an artist has an extensive knowledge of human nature, a large fund of political wisdom, and a keen sense of humor, his chances of success as a cartoonist are very good.

The architect. The architect plans homes, office buildings, churches, stadiums, and public buildings. He strives to satisfy a sense of order, fitness, and beauty; hence his is a truly artistic vocation. The architect and the sculptor create the most enduring works of art. The Temple of Karnack, in Egypt; the Parthenon, in Athens; the Coliseum, in Rome; the Taj Mahal, in India; the Cathedral of Rheims, France; Westminster Abbey, London; the Public Library, in Boston; the Capitol Building and the Congressional Library, in Washington, D.C., and all of the wonderful structures of commerce in our cities, were planned by architects. In addition to being an artist, the successful architect must also be a construction engineer and a business executive. It is also desirable for him to understand the principles of household decoration and furnishing, and landscape gardening. Although these last mentioned skills are now practiced as separate vocations, they are closely allied to the architect's field and are frequently found as departments in the best organized architectural offices.

Architecture is the most varied of all the artistic vocations. It has a strong appeal to the person with an active mind and body, and who is gifted with artistic talents in combination

with engineering and business ability. It combines outdoor and indoor work with the opportunity to meet and associate with people in every walk of life.

The landscape architect. The landscape artist makes his pictures with plants, shrubs, and flowers. He lays out walks and drives. He levels the ground, makes terraces, builds bridges, locates fountains, plants lawns, and in general surrounds the building which the architect has planned with an appropriate setting. He must combine artistic, botanical, and civil engineering knowledge in accomplishing his work. Landscape architects are employed by the owners of large estates to design and carry out plans for beautifying their grounds. Landscape architects are in demand by city planning commissions and park boards for the laying out of parks, boulevards, parkways, public playgrounds and bathing beaches along economic and æsthetic lines.

The United States Bureau of Plant Industry offers employment to landscape architects in certain of its departments. The United States Forest Service is also employing trained workers in this vocation to develop the scenic and recreational features of the national forests. A landscape architect of experience and proved ability has the opportunity to associate with artists and men of affairs in the planning of civic centers, new additions to cities, and in beautifying the grounds of great industrial enterprises. It is essentially an outdoor vocation and requires skill in handling men and materials, as well as in artistic conception and design.

The scientific artist. Books on scientific subjects need to be well illustrated. The scientific artist makes drawings of plants, insects, or animals, representing the different varieties. He also draws cross-sections of fibers, muscles, or dissected parts. This work must be done with the utmost accuracy to be of scientific value. It requires infinite patience, technical skill, knowledge of structure and form, and thorough scientific training. Pen and ink, pencil, wash, crayon, water-color, and sometimes oil paints are used by the scientific artist in his illus-

trations. The scientific artist may even reproduce desired objects in clay, papier-maché, or glass.

The marvelous glass flowers in the Harvard Botanical Museum are the work of a German scientific artist. In the Museum of Natural History, New York, instead of "stuffing" the skins of birds and animals, as was formerly the custom, they now make a perfect model of the animal in wood or plaster and stretch the skin over that. This is a new form of scientific animal sculpture. This field, then, offers the artist with a bent for science the opportunity to exercise both his scientific and his artistic skill.

Commercial and applied art. The illustrative side of commercial advertising calls for the services of many persons with artistic ability of a high order. The drawings include every type of subject. Knowledge of figure drawing, of color designing, and of artistic lettering is required. Work in the commercial field as a side-line for the increase of his income, provides a living for many a struggling artist before he has made his reputation. Such work is sometimes called "pot-boiler" work by the regular artists, but for the young man in the starvation stage of his artistic career it is often the only means of livelihood.

Furnishing and decorating. As previously stated, this branch of commercial art is sometimes considered a special department of architecture. It involves the artistic furnishing and decorating of homes, schools, clubs, churches, and public buildings. The decorator must know all about furniture, draperies, tapestries, and rugs. He should be able to reproduce houses and furnishings which represent past historic periods. This calls for a knowledge of the history, social customs, and modes of life of the people in many different countries and periods of time. The largest furniture and rug stores have specialists in furnishing and decorating, who give all of their time to this type of work.

Other branches of commercial art. Four branches will be mentioned and described briefly.

Costume design and millinery. Styles in dresses, hats, suits, and other wearing apparel are usually fixed by the great designers in Paris, London, and New York. These designers are artists in their various lines. Manufacturers of dress goods, wholesale milliners, and suit houses need to know what these designers are doing, hence they must maintain design departments of their own. The designing of costumes for theaters, moving-picture productions, and historic pageants is an interesting part of the designer's work.

Window dressing and store arrangement, is an independent line of work, which usually includes the art of "display-card" writing. The skillful person in this vocation needs to know how to drape textiles and arrange articles for sale in ways that will appear to the best advantage, and thus attract possible buyers. Every store, of considerable size, needs to have at least one employee trained in the art of display.

Arts and Crafts Shops usually sell hand-made articles of jewelry, pottery, needle-work, lamp-shades, leather, and metal work. Such stores often have their own shops, and also encourage people having art-craft skill to employ their leisure moments making articles of beauty which the art shop undertakes to display and market.

Photography may be either an art, or a craft, or both. Some photographers are artists. They have the artist's eye for pictures. They understand atmospheric and cloud effects. They have a feeling for the beautiful. They understand the art of perspective and composition. The processes of photogravure and enlargement have increased the demand for this work, thus enlarging the field for artistic photography. The brush and pencil artist sets down his impressions on paper or canvas. The photographic artist, with the same eye for beauty and effect, catches his vision immediately upon the sensitized plate of the camera, and brings it out with appropriate tone and feeling through his skill in retouching the negative. The moving-picture industry offers many openings for photographic artists, as well as for camera operators.

2. *Training, opportunities, and income*

Training of sculptors, painters, carvers, and illustrators. If you are thinking of entering one of these artistic vocations you should study drawing, design, and elect all of the art work which your school offers. This program will give you a chance to try out your ability, and to discover which branch of art is most attractive to you. It is very important that you should become familiar with the processes, the materials, and the use of the tools employed by those who practice a given art, as well as to know the traditions of the art and its past achievements. This usually means that you should plan to attend a school of design after you have finished high school or college. Travel and study abroad also is very desirable, because the world's greatest art galleries and schools of art are in Europe. Years of work and study are necessary before one can hope to earn a living at any of the artistic vocations. Only those having great talent and who are held to their purpose by ardent desire to excel can hope to succeed.

Income. Unless one has a private source of income, there is almost sure to be a starvation period while one is waiting for recognition. The income is uncertain even after one has become well known, but the true artist thinks first of his art and is inclined to be rather heedless in money matters. There are such great differences in the incomes of artists that it is impossible to state the average income that might be expected. Sculptures and paintings of the old masters are priceless, but modern works of art vary in value from a few dollars to hundreds of thousands for a single production, according to the skill and reputation of the artist.

Numbers engaged. There are only about 50,000 people in the United States who make a living as sculptors, painters, illustrators, and carvers, but there are probably ten times that many who have studied art and have talent enough to derive real pleasure from devoting their leisure hours to drawing, sketching, modeling, or woodcarving.

Avocational values. Amateur skill along any of these lines

is a very worth-while accomplishment, and helps a person to understand and enjoy better the work of those who are masters in the fine arts. One of the great corporation lawyers of the country has a studio, in a building at some distance from his law office, where he spends many happy hours drawing and painting. Through his playtime study of the principles underlying painting, drawing, and sculpture, he has become a recognized art critic, and enjoys the friendship of many famous artists.

If you are fortunate enough to have artistic ability you should take advantage of every opportunity to cultivate it, even though you may not feel that you could or would want to depend upon that type of work in making a living. There is so much satisfaction in being able to conceive a thing of beauty and fashion it in visible form that you cannot afford to neglect even a limited amount of artistic ability. Remember that it was the young man who hid his one talent because he thought that it did not amount to much who was so severely condemned by the Master in one of his parables.

Training of building and landscape architects, scientific artists, commercial and applied artists. Creative power and good taste are necessary in all artistic vocations. The architect and the landscape artist must also have engineering ability, and at least the equivalent of two years of the engineer's training. The Universities of Pennsylvania, Columbia, Illinois, Oregon, and California have four-year professional courses in architecture. The essentials of training for architecture may be had in other universities by specializing in civil and structural engineering, and taking certain courses in the Division of Fine and Graphic Arts. Apprenticeship experience as a draftsman in an architect's office usually is necessary, and extensive travel to see and study the best examples of architectural design, in this country and abroad, is most desirable.

It is possible to secure the basic training for commercial and applied art by taking the applied arts courses in a good city high school, or in a first-class school of graphic arts. One must

know how to place lines, colors, and textures together so as to secure unity of result. This knowledge depends upon instruction in drawing and painting, and actual practice in one or more handicrafts. Illustrative advertising and costume designing demand, in addition to skill in drawing, a knowledge of the artistic possibilities of the human figure, as well as the principles of bodily posture, movement, and activity.

TRAINING IN DRAFTSMANSHIP

All those who expect to excel in the graphic or applied arts should plan to take work in history, sociology, philosophy, psychology, literature, physiology, and plant and animal biology, as well as the required art courses. To have skill in the technique of any art is not enough. It is necessary, if one would excel, to see his vocation in relation to the whole of life. The artist in any field should have a broad foundation of general culture.

Numbers engaged. On page 244 are the returns from the 1920 Census on artistic vocations requiring skill in design.

The artistic vocations requiring ability in design in which there are the fewest women engaged are landscape gardeners, architects, draftsmen, and engravers. Those artistic vocations where there are the greatest number of women, in relation to men, are found to be artists, sculptors, and teachers of art,

designers, dealers in art and art materials, and window drapers and decorators. Practically all of the vocations above listed have increased in numbers engaged during the past nine years.

Vocations	Men	Women	Both
Architects	18,048	137	18,185
Artists, sculptors, and teachers of art	20,785	14,617	35,402
Designers	9,758	5,652	15,410
Draftsmen	50,880	1,985	52,865
Dealers in art and art materials	1,989	657	2,646
Engravers	14,492	561	15,053
Landscape gardeners	4,377	25	4,402
Window drapers and decorators	7,698	1,155	8,853
Totals	128,027	24,789	142,816

Income. Skilled *draftsmen*, who belong to the most numerous group of the design vocations, receive from $30 to $100 per week, but it is the exceptional draftsman who receives the larger amount. *Designers* in the costume trades, and in the textile manufacturing lines, often receive large salaries, but the average will probably not run over $50 per week.

Architects' fees are on the basis of a certain per cent of the cost of the work planned. This percentage varies from five per cent on certain types of commercial buildings, to seven or eight per cent on residences. On a building costing $1,000,000 the architect's fees might be as high as $60,000, but the architectural work on such a building would require many months of work and the help of several skilled draftsmen and other highly paid workers. Architects in small cities who do their own work earn from $2500 to $10,000 a year during periods of active building, but their incomes quickly feel the effects of dull seasons.

Landscape artists employed by the United States Forest Service receive from $2000 to $3500 per year. In private practice the rates are $20 to $50 per day, or a percentage of the cost of the landscaping work. *Scientific artists* and draftsmen are paid at the rate of from 25 to 50 cents per square inch, or by the hour, and earn from $5 to $10 per day. In *commercial*

art vocations the financial rewards depend upon the personal skill and business ability of the artist. Original ideas to illustrate current news items, or to attract public attention to articles offered for sale, bring good returns to the originator.

The "comic strip" artist, who makes a popular hit such as "Mutt and Jeff," "Gasoline Alley," or "The Toonerville Trolley," receives very attractive pay for his work. There is also a good demand for those who are skillful in designing dresses, hats, and costumes. Pay for the general run of workers in these fields will average from $25 to $75 per week. It is only those in the very top rank in artistic skill, however, who receive the high salaries which one reads about in the newspapers.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Who was the sculptor of the statue of Lincoln in the Lincoln Memorial, Washington, D.C.? Find out all you can about him.
2. Who was the sculptor for the statue of Lincoln for Lincoln Park, Chicago, and of the Shaw Memorial, Boston? How did he get his training, and how long was it before he became well known?
3. Look up the biographies of the following individuals, and find out in which line of artistic skill they excelled: Phidias, Michelangelo, Raphael, Leonardo da Vinci, Rembrandt, Sir Joshua Reynolds, Benjamin West, Horatio Walker, Thomas Nast, Paul Revere, Thomas Jefferson, Sir Christopher Wren, John McNeil Whistler.
4. Did you ever hear of Fontaine Fox? John T. McCutcheon? Sidney Smith? Who draws: "Bringing Up Father"? "Little Jimmie"? "S'matter, Pop"? "Smitty"?
5. If you live in a city where there are statues, monuments, and public buildings, find out who designed them. If your class can arrange to do so, it would be splendid to visit a sculptor's or a painter's studio, and see him at work. Visit also, if possible, the art museums and art schools in your city.
6. When you are walking down the street, compare the window displays of the stores. See which ones you think were planned by experts, and which by amateurs in window-dressing.
7. Watch a draftsman at work in an architect's office, or observe the class in mechanical drafting or machine design in the high school, and then make a list of some of the most important skills that a draftsman must acquire.

8. Visit the classes in freehand drawing, painting, and metal and leather work in the art department of your high school, or in some school of design, or in an Arts and Crafts Shop, and see for yourself just what the art worker must do and the talents which he must possess to do good work.
9. Why does a sculptor need to know almost as much about anatomy as a surgeon? Why does an architect need to know structural engineering? Why does a landscape artist need to know botany? Why does an advertising illustrator need to know psychology?
10. In studying the vocations that require skill in design, be sure to ask about or look up the disadvantages, as well as the advantages. Also remember that ability of this kind can be trained as an amateur skill that will give you much pleasure during leisure hours.

SELECTED REFERENCES

1. Dean, Edward O.: *Opportunities Out of Doors.*
2. Filene, Catherine: *Careers for Women*, 47–81 (architecture and landscaping).
3. Fryer, Douglas: *Vocational Self-Guidance*, 143–48 (photography); 148–52 (commercial art); 302–15 (architecture).
4. Hamlin, Talbot F.: "The American Spirit in Architecture"; in *The Pageant of America*, vol. XIII.
5. Hatcher, O. Latham, editor: *Occupations for Women*, 3–36 (fine and applied arts, and architecture).
6. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 49–66 (architecture); 67–122 (fine and applied arts).
7. Leuck, M. S.: *Fields of Work for Women*, chapter XI, The Fine Arts.
8. Platt and Farnham: *The Book of Opportunities*, 236–38 (art); 238–43 (applied art); 245–47 (architecture); 248–50 (landscape architecture).
9. Rosengarten, Wm.: *Choosing Your Life-Work*, 95–99 (architecture); 100–05 (art).
10. Stanford University Bulletin: *Vocational Information*, 28–36 (art architecture, applied art).

CHAPTER XVIII

ARTISTIC VOCATIONS REQUIRING DRAMATIC, MUSICAL, OR LITERARY ABILITY

1. *Nature of the work*

The actor. Persons who represent or take the part of characters in plays or dramas are called actors. It is necessary for the actor to have the ability to express ideas and emotions in a finished or artistic manner. He must be able really to "live" the characters which he represents — to lose his own identity for the time being and become Rip Van Winkle, Shylock, or whoever it may be that he is trying to represent. The actor needs to memorize long and difficult parts perfectly. He must learn how to get into the spirit and atmosphere of the play. He is required to follow implicitly the directions of the coach or director, and to adapt himself to the demands of the play as a whole.

There are all sorts of actors, from the "slap-stick" comedian to the Shakespearian player, and from the "super" in a mob scene or chorus to the "lead" in a great drama. Movie actors attract the attention of young people because moving-picture plays are much more common than regular stage plays. Also there is much advertising of movie stars, in which press-agent stories of fabulous salaries are quite common. The real truth is that very few people are capable of reaching the high places, either in the moving pictures or the regular drama. The profession is overcrowded, the income is irregular, employment is uncertain, and the conditions under which the work must be done are unfavorable to home life.

The lecturer or public speaker. The person who makes his living as a lecturer or public speaker needs to have unusual powers of verbal expression, and to possess many of the qualities of the actor. What are known as Lyceum Bureaus make a

business of booking lecturers, entertainers, and musicians. The persons most in demand in this field are those who have already made a reputation as explorers, writers, statesmen, or scholars. The professional public speaker, who has not had the background of some absorbing vocation in which he has become distinguished before taking to the lecture platform, is likely to be superficial. Ability as a public speaker is an asset in many vocations. If a person has sound convictions, a fund of valuable knowledge, and a desire to extend his influence, he is now able to secure almost unlimited audiences through the medium of radio broadcasting. It is better, therefore, to think of public speaking as a possible side-line of a successful vocation, rather than as a vocation in itself.

The musician. Music is one of the most widespread means of private enjoyment and public entertainment. Voice artists find employment in church choirs, glee clubs, and choruses, or on the stage in grand opera. Those who play pipe organs are employed in churches, moving-picture houses, and municipal auditoriums. Players on other instruments, who attain professional skill, become individual artists or soloists with bands, orchestras, or broadcasting studios. The training of professional and amateur musicians gives employment to many music teachers in the public schools, conservatories, and private studios. The person who possesses musical talent should spare no pains to cultivate it, in order that he may become as expert as possible in musical performance. A trained amateur knowledge of music tends to improve the quality of professional skill by providing more appreciative, as well as more critical audiences.

As a profession, music is offering an increasing field of opportunity. Nearly every American home has either a phonograph or a radio. Amplifiers are being perfected to reproduce the most delicate musical notes with fidelity. A taste for good music is being cultivated. Inducements for skilled amateurs to become professional musicians are thus on the increase. While in high school or college one should take advantage of

the opportunities offered by musical clubs, orchestras, and bands to develop one's musical talent.

The author. Some people are word artists. They can express their thoughts in such a way that people take delight in reading, over and over again, what they have written. Poets, novelists, dramatists, short-story writers, historians, biographers, essayists, and literary critics need to know how to use words artistically, but they also must have something worth writing about. There never was a time when so many magazines, periodicals, and publishing houses were calling for worthwhile manuscripts, or when the rewards of successful authorship were so great as at present. The competition among authors, however, is very keen, and success is won only by those who have untiring persistence in addition to skilled craftsmanship in the art of expression. The demand for good short stories is greatest, but real distinction more often is achieved in the field of poetry, the novel, or the drama.

The journalist. The journalist is a writer who writes about or discusses things and events that are more or less of immediate public interest. He must put what he has to say into such form that it will attract immediate attention. He is usually a news writer or reporter for a daily or weekly paper, or one who interprets current events or political movements in the form of editorial comments. A relatively new field in journalism is opening through special departments of the great daily newspapers. Feature writers, columnists, and those who write expertly about social, financial, and political affairs find here a market for their literary wares. A few become so well known that their articles are syndicated, and appear in hundreds of newspapers every day. The opportunity is thus afforded for the skillful writer to wield a powerful influence in the social or political life of the nation.

Journalism has a great fascination for any one who is interested in people and current events, and who also has a talent for vivid word portrayal. One needs to have the capacity for patient hard work, and to be willing to endure the

irregular life and uncertain income of the beginner, the "cub" reporter, or the obscure writer. Owing to the increasing power of the press in American life, the journalist has unequaled opportunity for public service. The great city dailies are generally willing to give ambitious young writers a try-out. Advancement beyond the apprenticeship stage depends on one's own attitude, good sense, and news-writing ability.

2. *Opportunities, training, and income*

Numbers engaged. According to the United States Census for 1920, the numbers engaged in the vocations discussed in this chapter are:

Vocations	Men	Women	Both
Actors	15,124	13,237	28,361
Showmen (circus, and special)	18,694	1,117	19,811
Authors	3,662	3,006	6,668
Editors and reporters	28,467	5,730	34,197
Musicians and music teachers	57,587	72,678	130,265
Theater owners and managers	17,138	1,257	18,395
Stage hands and helpers	5,377	426	5,803
Theater ushers	2,868	2,353	5,221
Totals	148,917	99,804	248,721

About two fifths of the total number of persons engaged in the above vocations are found to be women. The vocations where women appear to predominate, or at least equal the number of men, are musicians and teachers of music, actors, authors, and theater ushers. The number of women editors and reporters increased 37 per cent, between 1910 and 1920, while the number of men in the same vocations decreased about six per cent. Reporting and editing involve types of service which women are well adapted to perform satisfactorily. Among actors also there was a noticeable decrease in the percentage of men, and a corresponding increase in the percentage of women during the ten-year period. The percentages of men and women authors remained just about the same in 1920 that it was in 1910.

TRAINING FOR THE DRAMATIC ARTS

Theater ushers, stage hands, and showmen are reported in connection with the vocations requiring musical, dramatic, or literary ability, because they are related to these vocations more closely than to any others and are not classified elsewhere. It also happens that many people who start as ushers, stage hands, or as showmen's helpers become interested in the vocations, and later become performers in these fields.

Training and income. Training for these vocations is varied, and differs for each one. This is also true of the income to be expected.

Actors. If one is ambitious to become either an actor in the spoken drama, or the screen drama, it is necessary to have a quick imagination, a sensitive and emotional nature, great earnestness, and abounding energy. In acting it is essential to have the capacity to forget or sink one's own individuality, and to become literally the character which one is portraying.

If you believe that you have dramatic talent and personality and have selected acting as your vocation, you should enter

wholeheartedly into the dramatic opportunities offered in your high school or college. There are schools of dramatic art that can help you to take the initial steps, but practical stage experience is the most necessary part of the preparation. One should not be misled by the advertised salaries of stage or moving-picture stars. Actors as a class earn between $25 and $100 per week. Exceptional actors, either on the stage or in the films, are sometimes paid thousands of dollars per week.

The public speaker or entertainer. The vocation of public speaker or entertainer requires a much broader education than the actor. In addition to special training in the department of public speaking of a university, or in a private school of dramatics and oral expression, he should seek every possible opportunity to speak in public and before all sorts of audiences. The income of a public lecturer depends almost entirely on his reputation and the interest of the public in his message. Lyceum Bureaus pay from $50 to $250 per lecture. A few lecturers earn from $5000 to $15,000 per year. Tuition in schools of expression and dramatic art ranges from $150 to $700 per year. Fees for lessons from private teachers are from $3 to $25 per lesson.

Musicians. Professional musicians and teachers of music outnumber the other vocations in this group, and the women far outnumber the men. Because of the necessity for a great deal of private instruction, the cost of musical training is higher than for almost any other line of work. For the highest type of musical achievement training in a recognized conservatory of music or under some great private teacher is necessary. There is so much splendid amateur talent in music, which has enjoyed the best obtainable training, that the standards of efficiency for the professional musician are extremely high.

Only those with the outstanding native gifts should be encouraged to think of music as a life career. The road is long and hard. Hours of grilling practice daily, and continued for years, confront the aspiring musician. Mental and physical adaptability, artistic temperament, financial backing, and

persistence in technical study are required. Music teachers and supervisors in the public schools receive from $1800 to $3600 per year, and in some places must hold special teaching credentials from the State. Band and orchestra players are frequently members of musicians' unions, and receive fees on a specified scale. Many of them engage in other vocations, with music as an extra or side-line. Grand opera singers receive from $500 to $2500 for a single performance, in addition to large royalties from copyrighted phonographic records.

Singing in the church choir, community choruses, or the high-school glee clubs offers one an opportunity to try out one's vocal talents. Many great singers have thus been discovered, and encouraged to seek further training for a musical career. Those having gifts for instrumental music can exercise them in connection with the local band or the school orchestra. Your high-school counselor will also know about certain psychological tests of musical ability that may help you to discover yourself musically.

Authors and journalists. Preparation for these vocations should include the broadest possible college or university education, including specialization in English, economics, sociology, psychology, and history. One should also have an elementary knowledge of several sciences. No opportunity to write for home papers or to assist in editing and managing high-school or college journals should be overlooked.

Schools of journalism are maintained by many universities, and competent journalists are to be found in the English departments of many high schools and colleges. Reporters receive from $800 to $2000 per year, and editorial writers are frequently paid by "space" rates — that is, at so much per column of accepted matter.

Preparation for authorship. The prospective author must first secure the best possible liberal education, finding a field in which one is intensely interested, and then writing, writing, writing, until recognition comes. Few writers, except those who have attained distinction, depend upon their pens for a

living. One of the best known writers of short stories for boys works in the business office of a college. His income from his stories exceeds that from his regular vocation, but he continues to hold his college position.

The largest rewards, in the field of authorship, come to the writers of popular novels. A song or a musical comedy that becomes the vogue is also a source of large income to its author. The quality of what one writes cannot be measured, however, by what it brings to the writer in money. Much of the world's best literature has been written by ministers, lawyers, doctors, teachers, editors, and statesmen, to whom writing was an avocation.

In addition to the 7000 authors and the 35,000 editors and reporters in this country, who make a major portion of their income from writing, there are probably ten times as many occasional writers. These persons write because of interest in or special knowledge of some subject, and without thought of the financial return. Writers of school and college textbooks are usually teachers or professors, who add to their regular salaries the royalties received from their books. Authorship, at least in its beginnings, is generally a leisure time occupation for people in business or the professions. Journalism, on the other hand, may be entered directly as a full-time vocation through the apprenticeship route in the service of town, country, and daily newspapers.

SEEK-FURTHER QUESTIONS AND DIRECTIONS

1. The following people won fame as actors: Edwin Booth, Joseph Jefferson, Sir Henry Irving, Maude Adams, Julia Marlowe, Ellen Terry, Jane Cowl. Find out all you can about two or three of them.
2. Have your teacher give you the name of some Lyceum Lecture Bureau. Write and ask this Bureau to send you the advertising material on some of their best lecturers and entertainers. This material will help you to see what points are stressed by the advertising agency in "selling" their attractions to the public. Also, look up the life stories of Wendell Phillips, John B. Gough,

Elbert Hubbard, and William Jennings Bryan, as illustrating different types of lecturers and public speakers.

3. If you will read the biographies of some famous musicians it will help you to understand how much hard grind is necessary before even the most talented musician can win recognition. Look up: Enrico Caruso, Madame Ernestine Schumann-Heink, Ignace Jan Paderewski, John Philip Sousa, Theodore Thomas, Fritz Kreisler, and Mischa Elman.
4. In studying the lives of authors and literary people, be sure to notice how many of them had other vocations while establishing themselves as writers. Examples: Oliver Wendell Holmes, S. Weir Mitchell, James Barrie, Henry van Dyke, Lew Wallace, Richard Henry Dana, Jr., Samuel L. Clemens (Mark Twain), Will Rogers, Kate Douglas Wiggin, and John Burroughs.
5. Talk to the editor of your local paper and find out what training he had to have, how he got his first job, what his pay was, what the advantages and disadvantages of newspaper work are, and what questions he asks of those who want positions on his paper as reporters.
6. Make out programmes of study which you think should be followed by those who are planning to become musicians, actors, public speakers, authors, or journalists. After you have worked out the courses first by yourself, ask the teacher of this course or the guidance counselor of your school to make suggestions.

SELECTED REFERENCES

1. Bernays, E. L.: *An Outline of Careers*, 127–34 (editing); 191–203 (journalism); 263–70 (motion pictures); 271–83 (music); 411–22 (writing).
2. Filene, Catherine: *Careers for Women*, 111–18 (dramatics); 342–47 (music).
3. Hatcher, O. Latham, editor: *Occupations for Women*, 37–43 (dancing); 44–60 (dramatics); 61–88 (music); 89–119 (writing).
4. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 263–72 (dramatic art); 491–521 (music); 691–711 (writing).
5. Leuck, M. S.: *Fields of Work for Women*, chapter x.
6. Platt and Farnham: *The Book of Opportunities*, 227–35 (acting); 258–61 (writing); 264–68 (the theater); 270–71 (moving pictures); 275–76 (broadcasting); 276–81 (circus); 281–85 (sport).

7. Rosengarten, Wm.: *Choosing Your Life-Work*, 192–98 (literary work); 222–27 (music); 265–69 (the stage).
8. Van Dyke, Henry: "Literature"; in vol. VIII, *Vocations*, edited by W. DeWitt Hyde.
9. Stanford University Bulletin: *Vocational Information*, 137–38 (journalism); 159–61 (music); 161–63 (public speaking); 197–99 (writing).

CHAPTER XIX

EXPLORATION AND RESEARCH VOCATIONS

1. *Nature of the work*

Discovering the unknown. The facts and laws of science do not just happen to be discovered. Some one has to hunt them out and make them known. People who devote their lives to such tasks are explorers, inventors, and research workers. The explorers and research people make the discoveries, and the inventors find out how to apply the new facts and principles to some practical purpose. The success that man has had in mastering the forces of nature and in putting them to work for him has been due to the wonderful discoveries of research workers and the great ingenuity of inventors. In both of these fields our own country occupies a leading position.

Several great "Foundations" or endowments have been established within recent years, the incomes of which are devoted entirely to supporting workers in various kinds of research. Many industrial firms also have research laboratories, or assist in endowing such laboratories at universities, where research in pure science is carried out. This means that the person interested in science for science's sake can look forward to a rapidly expanding field of opportunity.

The explorer. If you want to get an idea of what the earth explorer has done for the science of geography, just examine a map of the known world in the year A.D. 1400. The men who have given us the information on which present-day maps are based were sometimes scientists, sometimes just bold adventurers seeking a fortune, and sometimes both. At any rate they were curious. They did not accept the theories then prevalent that the earth was flat and square, and that if you went far enough you would fall off. They organized expeditions to find out the facts. They braved superstition. They took chances. Some of them failed, but enough of them suc-

ceeded to encourage other bold seekers after the truth, so today the earth has been circled in every direction.

There is very little, if any, land left that the eye of man has not seen. The aeroplane has taken the place of the caravan and the sailing ship, and modern explorers cover in a day areas which formerly were inaccessible, or which required years to survey and chart accurately. Land exploration is therefore nearly completed. Commander Byrd is finding out the last things to be known about the Antarctic Continent. What remains to be done in this line is of an intensive nature.

Parts of Africa, Asia, and South America remain for detailed study, but exploration in the future will be more and more in the realm of scientific discovery. There may not be quite so much romance about the modern type of exploration as there was in the adventure of a Columbus or a Vasco da Gama, but it will still appeal to those who want to be pioneers in the field of knowledge. The job of the trail-blazer is different now, but it is just as fascinating and just as important as it ever was.

The archæologist. The archæologist is a kind of explorer who collects the relics of past civilizations. He organizes expeditions to buried cities, uncovers their ancient walls and buildings, and collects all sorts of evidence that will throw light on the type of civilization which flourished when the city was inhabited. Most of what we know about ancient Egypt and Babylon has been discovered by the archæologists. The greater knowledge which we now have of how people in past ages lived is due again to curiosity in action.

Nearly every one is curious to know how those who inhabited the earth thousands of years ago lived, and what they did. The archæologist not only wonders, but sets about the task of finding out. He delves, and digs, and pieces things together. He studies ancient languages, so that he may read inscriptions, or the markings on monuments, or tablets of clay. By and by he is able to give us an account of the government they had, the kinds of work by which they made a living, and to show us samples of their arts and crafts, their literature, their sculpture,

and their domestic life. The archæologist in this country has found much to interest him in studying the early civilizations of South and Central America, the Cliff Dwellers of Arizona and New Mexico, and the Mound Builders of the Middle West and South.

The astronomer. The astronomer is an explorer of the heavens. He discovers new worlds, how far away they are, what they are made of, and all that can be learned about them with the wonderful instruments to be found in the great astronomical observatories. The astronomer should be an expert in mathematics and physics. He makes observations with his telescope, but these would not help him to know much about the stars and their movements without the use of mathematics in making his calculations.

The application of the astronomer's knowledge of the laws of physics to his problems has resulted in such inventions as the spectroscope, the polariscope, the thermopile, and the bolometer. Now the astronomer can tell us just what a given star is made of, what its temperature is, what its radiation is, whether it has an atmosphere or not, and just how much attraction it exerts upon the earth and other heavenly bodies.

The mariner's compass, and the astronomer's knowledge of how to calculate bearings by the stars, made possible the voyages of discovery of the ancient mariners. The earth inductor compass, one of the more recent inventions, which took advantage of the latest discoveries in astro-physics, made possible the successful flights of Commander Byrd and of the dirigible Norge, over the North Pole, during 1926, and of Colonel Lindbergh from New York to Paris, in 1927. Astronomy is the oldest of the sciences, and still continues to be one of the most useful and interesting as a means of making a living.

The inventor. The inventor is the man who takes the discoveries of the scientific research workers and finds out how to put them to work in the form of new machines, or new processes of manufacture. Some of the greatest inventions seem to have been almost accidental discoveries, but in reality they

were not. A careful tracing of the history of inventions will show that they have almost invariably been made by men who were experts in some line of work. They were more than experts, however, in technical skill. They were thinkers and problem-solvers. They were not only interested in doing the day's work in the regular way, but their minds were alert to find out better or more economical ways of doing it. The most marvelous machines of industry were not thought out in their present form by one man. They are the result of the inventive genius of many men, each adding his improvement.

There is a fascination about invention which attracts thousands of people to attempt inventive projects. The way of the inventor, though, is hard. The world is skeptical; it likes things as they are. Workmen have been known to smash a new machine because they feared that it would supplant them by doing their work more quickly and more cheaply. The inventor must secure a patent to protect his rights, and then convince some person with money that his invention would, if manufactured, be a paying investment. The inventor is the modern pioneer. He needs to have vision, courage, persistence, and the capacity to endure hardship. He needs also to be a fighter, because, if his invention promises to be a success, there are always Apache Indians of industry lurking in ambush to cheat him out of his rights. The life of the successful inventor always will be enlivened by many thrilling adventures.

The geologist. The scientist who makes a specialty of finding out all there is to know about the earth is a geologist. If he studies the natural divisions of the earth's surface, draws maps of continents and political divisions, and writes descriptions of these things, we call him a *geographer*. If he studies rocks, their history, composition, and origin, he is known as a *petrologist*. If he makes a specialty of studying the fossil remains of animals and men who lived on the earth in ages past, we call him a *paleontologist*. The person who devotes his time to the study of earthquakes, their origin, and effects is known as a *seismologist*. Then there is the *mineralogist*, who learns to know all the dif-

ferent minerals, and the rock formations in which they are most likely to be found.

The study of geology is therefore the foundation science for a great many different vocations. It has a definite bearing upon national prosperity, because the geologist is able to chart great natural resources in soil, mineral wealth, coal, oil, and timber resources. Allied sciences, which are very necessary to civilized man's comfort and welfare, are meteorology and climatology, by means of which atmospheric and climatic changes are forecast. The meteorologist, whose forecastings mean so much to the farmer, the sailor, the merchant, and the builder, must have a foundation training in the earth sciences. The National Government maintains a Weather Bureau, with branch offices in every important city in the country, and employs a small army of trained workers.

Research workers in chemistry and physics. Knowledge of the laws of physics and chemistry is so important at the present time that the number of people who devote their entire time to research along these lines is constantly increasing. There was a time when the only pure-science research carried on was in college and university laboratories. This is no longer true. The United States Government maintains its Bureau of Chemistry for chemical research, and its Bureau of Standards for physical research. Then there are the Rockefeller and Carnegie Foundations, which devote the income of several hundred million dollars to research work of all kinds. Every important hospital has its chemist and toxicologist. Every great industrial plant has its physical and chemical laboratory where research work is carried on.

The research worker must usually concentrate on a very narrow segment of his field. This is a disadvantage unless, outside of his laboratory, he devotes considerable time to a hobby or avocation not related to his research field. He will, however, derive his greatest satisfaction from his research work. In this he is always spurred on by the possibility of making some new discovery, and of adding to the sum of human knowledge.

Research workers in botany, biology, and entomology. The research worker in these fields deals with plants, animals, and insects. He studies structure, organic nature, habits, and life history. Research work in botany, biology, and entomology is of great importance to the farmer. On this account the

STUDYING PLANTS IN THE BOTANY LABORATORY

United States Government spends millions of dollars every year, in connection with the Department of Agriculture, on specialists in plant pathology, physiology, breeding, and taxonomy, or on classification, animal husbandry, and the study of insects, pests, and parasites. Experiment Stations are maintained in every State for plant propagation, biological and entomological research, and demonstration purposes.

The Bureau of Entomology employs many field workers who study the life histories of injurious insects in fields and orchards, and devise methods for extermination or control. Investigators are needed in all the great natural history museums. The Federal Horticultural Board also employs expert botanists and entomologists. Coöperative agricultural and horticultural organizations employ their own research workers, who seek to find ways of improving existing varieties of grains, fruits, or domestic animals, or of combating insect, animal, or plant pests.

Another important branch of research has to do with conserving the supply of food fishes, the care of fur-bearing animals and the relation of birds and other animals to crops. Fish hatcheries for the replenishing of our streams and lakes with trout, salmon, bass, and other varieties of fish are maintained by State and National Governments. Marine biological stations, where exhaustive studies of marine flora and fauna are made, are supported by the United States Government and by private endowments. Then there are the research workers in college and university laboratories, who devote most of their time to investigations in the above-mentioned fields.

Economic research. Every important newspaper has its financial page, which is edited by an expert in economic research. This person keeps in touch with financial and commercial movements, at home and abroad. He watches the trends in buying and selling of both stocks and bonds. He notes the fluctuations in exchange between the various countries, especially the leading commercial and industrial Nations. He acts for business and financial circles as a kind of business-weather forecaster. He advises the readers of the paper in regard to investments, and undertakes at all times to give an accurate picture of the economic status of his State and Nation.

To be a financial expert requires training and insight. The advice, predictions, and suggestions must be based on economic research. There are now great concerns which make economic research a specialty, and which have as clients banks, business houses, and private investors. The business economist must not only know intimately the general principles of economics, but he must painstakingly gather the facts regarding present conditions of business and commerce. The United States Department of Commerce maintains sixty-two research associates, representing thirty-eight industries, who carry on special investigations of this kind. The results of these researches are published and made available for the benefit of any American business or industrial leader who may be interested.

There are also Graduate Schools of Business, and Schools of Finance, which train workers for this service.

Social research. Social research involves the investigation of social and political institutions. We not only need to know how people can make money by wise investment or successful business enterprise, but we also need to know how they live, and the effect of certain kinds of living conditions upon character and citizenship. The social research worker undertakes to discover some of these things. He gathers the facts about the effect of long hours of labor upon the health of women and children. He investigates housing conditions in the great cities. He tries to find out the underlying causes of crime and poverty, and how to remove these causes. He wants to know what people do with their leisure time, and how this affects their character and usefulness. He delves into political situations, and studies the effects of certain kinds of city and state government. He is not necessarily a statesman or a reformer, but he discovers the facts of which the statesman or reformer makes use in securing changes in the laws or improvements in the conditions revealed. Research workers in these fields are found in university departments of sociology and political science, and as independent workers, or fellowship holders under such Foundations as the National Research Council or the Commonwealth Fund. The work is interesting, and when scientifically done may contribute much to social welfare.

Educational and psychological research. Probably the greatest remaining unexplored continent is the human mind. The psychological research worker devotes his time to finding out how the human mind works. He undertakes to discover the laws of mental activity. He devises apparatus for testing mental traits. He develops other tests which enable him to estimate the brightness or dullness of school children. He studies the laws of learning and habit formation, and seeks to improve methods of teaching. He can tell us how best to study and become efficient in the use of our minds.

The vocational psychologist analyzes various occupations to

find out what mental and physical traits are most necessary for success in such work. He then tries to make up tests which will discover whether you or I have the mental and physical traits necessary to carry on in that particular vocation. A discussion of some of these tests was given in Chapter II and helped you to get some idea of their purpose and how they are applied.

Psychological research workers are found most often in colleges and universities, where they have adequate laboratories. Some industries also support research psychologists to study their employees, and to help the foremen and superintendents to place the workers in the positions best fitted to their skills and interests.

School systems also maintain research workers who have been trained in psychology and statistics. They are called "directors of educational research." They make careful surveys to find out what progress children are making in their school work. They find that some children can do more work, and do it in a shorter time, than other children can. They find

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also that children usually do better work in the subjects in which they are interested.

The director of educational research tries to help the teachers to know more about the way in which children's minds work, and how to adapt their teaching to the mental abilities of the children in their classrooms. There are a great many positions now available for people who can assist the directors of research. These assistants are usually called guidance workers or counselors. They study individual cases and give advice to pupils regarding their school work, and also try to help them to find the right vocation in life. This is a very helpful sort of service, and enables a great many boys and girls to get more out of their school work than they otherwise would.

2. *Training, opportunities, and income*

Explorers and archæologists. The explorer and the archæologist each needs to have a combination of scientific knowledge and executive ability. Each also needs to have physical stamina and courage to enable him to face all manner of dangers. Karl Akeley, sculptor, taxidermist, and curator of the Metropolitan Museum of Natural History, New York, recently lost his life hunting and exploring in the Belgian Congo. Lord Carnarvon, who, with Howard Carter, discovered the tomb of the Egyptian King, Tutankhamen, died from an infection before the inner chamber of the tomb was actually opened. Many other cases could be mentioned to show that modern explorers must be prepared to face hardship and even death in accomplishing their work.

Exploring and archæological expeditions are usually fitted out by some university, public museum, or wealthy private individual. The leaders are generally more interested in the possible discoveries than in the compensation received. Successful exploration, however, often results in large financial reward through the sale of books, lectures, and moving-picture rights. The National Geographic Society sponsors and finances some of the most extensive explorations and archæological ex-

peditions. It also reports the results in an entertaining way in *The National Geographic Magazine*, a magazine, by the way, which every boy and girl should read.

The astronomer and the geologist. Astronomers are employed mostly by universities and colleges, and in connection with great observatories on private foundations. The five largest observatories in this country are: the Harvard College Observatory, Cambridge, Massachusetts; the United States Naval Observatory, Washington, D.C.; the Yerkes Observatory, Williams Bay, Wisconsin; the Lick Observatory, Mount Hamilton, California; and the Mount Wilson Observatory, Mount Wilson, California. The salaries received by astronomers compare with those received by other college and university professors and research workers. The preparation involves college graduation and extensive post-graduate work in the field of astronomy, mathematics, physics, and chemistry.

The geologist must not only be a specialist in geology, and have intensive knowledge of some particular phase of geological science, but he also needs the foundation training of the surveyor and draftsman. The petroleum geologist, the mining geologist, and the coal geologist must be able to observe the extent, form, and inclination of each rock formation. He must also be able to plot the data secured by observation, and determine from the structure of the outer crust of the earth what the character of strata underlying the area investigated may be. The geologist therefore needs training in field work. This is given as part of the training in the best universities.

Geologists find opportunities for employment as teachers in colleges and universities, and as office and field workers for the United States Geological Survey, the United States Bureau of Mines, State Bureaus of Mines, and for private coal, oil, and metal mining companies. At present the field of petroleum geology, technology, and management offers the most numerous openings. Formerly the greatest number of openings were in the field of mining geology. There are some openings for women in drafting, museum work in paleontology, and teach-

ing in colleges, and one woman is a member of the United States Geological Survey.

The range of salaries. In the field of geology the range of salaries is very wide. Draftsmen, office workers and field workers in government service receive from $1400 to $4000. Chiefs of divisions or bureaus receive from $6000 to $10,000. Geologists for private companies and public-service corporations receive from $2500 to $25,000 per year. Some geologists for petroleum companies receive a guaranteed salary, plus a percentage of the income from wells discovered. Preparation involves college graduation, and from one to three years of post-graduate work as a geology major, with supplementary work in physics, chemistry, mathematics, and engineering.

Research workers in physics, chemistry, electricity, and the biological sciences. There is a steady demand for well-trained *physicists*. The United States Bureau of Standards spends over a million dollars every year and employs some five hundred people, more than half of whom are engaged in research. The salaries in these government positions are from $1500 to $5000, depending upon training, experience, and length of service. The largest field for the physicist is in industry. Electrical, optical, and other large industrial plants maintain physical laboratories with scientific staffs, and spend large sums yearly on research. Salaries in industry are better than in government service, ranging from $3000 to $10,000 a year. Patience, keen observation, accuracy in recording results, and ability to stick to a difficult task until completed are required of the physicist.

There are some 20,000 *chemists* in the United States. They are found as teachers in schools and colleges, as men engaged exclusively in research with endowed institutions, and as employees of the Federal Government in the Bureau of Chemistry, the Bureau of Mines, the Bureau of Soils, and the Public Health Bureau. Chemists are also engaged as assayers in mints, smelters, and for mining corporations. Practically every type of manufacturing plant has its chemical laboratory,

with a staff of research chemists. Chemistry as a vocation is somewhat overmanned at the present time, but there are still favorable openings for those with adequate training and ability.

In 1920, it was found that twenty-five per cent of the positions, filled by the employment bureau of the Chemists' Club of New York, were at salaries of $1200 or below; 61 per cent, $1200 to $2400; 9 per cent, $2400 to $4000; and 5 per cent at salaries $4000 or over. Junior chemists — that is, those who have had four years of undergraduate work in an approved institution — start in government work at $1200 to $1500. Associate chemists and chemists receive from $1800 to $4000. Chemistry teachers in high schools and universities receive from $1200 to $6000 or more.

Entomologists, botanists and *biologists* are most frequently employed in connection with government work in agriculture, horticulture, and animal husbandry. Civil-service examinations are required, and the usual education called for is that of college graduation. Beginning salaries are from $1200 to $1600. Salaries of $2400 to $3600 are paid in the better governmental positions below that of bureau chief. High-school, college, and university positions pay from $1200 to $6000. The highest salaries in the teaching positions are paid to the heads of departments in universities.

Qualifications of research workers in electricity are about the same as for other scientific research vocations, with major studies in physics, chemistry, mathematics, and the foundation courses demanded of electrical engineers. Openings are available with the great hydro-electric corporations and manufacturers of electrical machinery, all of whom maintain research laboratories. Beginners have incomes of from $1500 to $2000. Those who possess originality, inventive genius, or administrative ability receive compensation based on their productive ability, and this is sometimes very high.

Economic, psychological and educational research. Success in these fields calls for training at least equivalent to the Doctor of Philosophy degree. In addition to specialization in one's par-

ticular field, it is necessary also to have marked ability to treat social and economic data statistically and to be able to interpret the results. The economic research workers have opportunities for receiving much higher ultimate incomes than are available to psychological and educational research workers. This is due to the fact that the economic research people work for banks, and business and industrial concerns, while the other two types work for colleges, universities, and public school systems. There are a few vocational psychologists, however, who occupy research positions with large corporations. Salaries range from $2000 to $7500 per year, with a few earning $10,000 or over.

While the compensation in these fields is not high, when the amount of training demanded is taken into the account, there are other kinds of rewards connected with such service. Because the problems involved have to do with economic and social relations their solution contributes to human welfare and happiness. When one feels that he is helping to remove stumbling blocks from the pathway of his fellowmen, he is more inclined to think of his work in terms of service than in terms of money. No one should enter these vocations who is not willing to take part of his pay in this form.

SEEK-FURTHER QUESTIONS AND DIRECTIONS

In reading the life stories of the men named in questions 1–4, bear in mind: (*a*) their preparation for the work; (*b*) the difficulties which they overcame; (*c*) the character qualities displayed; and (*d*) the contribution which they made to human knowledge and welfare.

1. *Explorers, archæologists, and astronomers:* David Livingstone, Captain Robert F. Scott, Admiral Robert E. Peary, Professor Fridjof Nansen, Captain Roald Amundsen, Howard Carter, Professor James H. Breasted, Roy Chapman Andrews, Theodore Roosevelt, Johann Kepler, and Sir Isaac Newton.
2. *Inventors, geologists, chemists, and physicists:* James Watt, Robert Fulton, S. F. B. Morse, Alexander Graham Bell, Michael Pupin, Charles P. Steinmetz, Thomas A. Edison, John Caspar Branner,

James G. Dana, Robert A. Millikin, Alfred Einstein, Madame Marie Curie, Ira Remsen, and William T. Kelvin.

3. *Botanists, biologists, entomologists:* Asa Gray, Charles R. Darwin, W. H. Hudson, John Burroughs, John James Audubon, J. Arthur Thompson, T. H. Morgan, and David Starr Jordan.
4. *Psychological, sociological, and educational research specialists;* Alfred Binet, K. J. McKeen Cattell, Edward L. Thorndike, L. M. Terman, G. Stanley Hall, Albion Small, Richard T. Ely, Roger W. Babson, Leonard P. Ayres, Ben D. Wood, H. O. Rugg, Truman Lee Kelley.
5. In which of the vocations discussed in this chapter would success be possible without a college education? Base your answer upon your study of the lives of those who have succeeded in these vocations.
6. From the life histories of research workers, explorers, and inventors, see if you can discover which of these types of vocation is most frequently undertaken as a first line of work, and which ones tend to develop as a side-line of some other vocation.
7. Which do you think would be the more thrilling sort of experience — to take moving pictures of wild animals in the jungles of Africa, or to experiment with two million volt charges of electricity in a university laboratory?
8. When Thomas A. Edison was a telegraph operator, he invented an alarm-clock attachment that would operate his telegraph key, giving his station signal every half-hour to the chief operator. This enabled him to take a nap without the chief operator knowing it. One day an inspector found him asleep and he was discharged. Query: What questions should one ask about a proposed invention before spending a lot of time and ingenuity upon it?
9. Professor Samuel P. Langley invented an aeroplane which on trial failed to fly. After the Wright Brothers had invented an aeroplane that would fly, an aeronautical engineer took Langley's old plane, repaired it, put a modern engine in it and demonstrated that it would fly after all. What does this incident suggest in regard to invention as a vocation?
10. Vocational psychologists have found that a high grade of intelligence is necessary if one would succeed in certain occupations. Do you think that all chemists or all geologists, or all biologists are equal in intelligence? If not, what other elements are there which enter into success in these vocations?

SELECTED REFERENCES

1. Bernays, E. L.: *An Outline of Careers*, 349–53 (scientific research).
2. Caldwell and Slosson: *Science Remaking the World.*
3. Filene, Catherine: *Careers for Women*, 410–43 (scientific work).
4. Fryer, Douglas: *Vocational Self-Guidance*, 288–99 (chemical and industrial engineering).
5. Hatcher, O. Latham, editor: *Occupations for Women*, 433–64 (scientific research).
6. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 619–64 (scientific research).
7. Platt and Farnham: *The Book of Opportunities*, 338–61 (scientific research).
8. Stanford University Bulletin: *Vocational Information*, 165–87 (applied science).
9. Ward, Henshaw: *Exploring the World.*

CHAPTER XX

ENGINEERING VOCATIONS

1. *Nature of the work*

The engineering profession. Engineering has been called the profession of progress. This is certainly true in the fields of manufacture, mining, transportation, power transmission, and construction. The engineer is the world's greatest problem-solver. It is his business to plan the best way of doing things, and also to supervise the actual performance of the task as planned. He looks ahead, sees what difficulties might arise in carrying out a given project, and then works out the best way to overcome or avoid these difficulties. The engineer is never satisfied with merely getting the task performed; he is always on the lookout for methods of economizing in time and materials, without sacrificing strength or efficiency. So expert have American engineers become that they have perfected mechanical devices which give our Nation control over tremendous productive power.

With about 100,000,000 people, we produce ten times as much annually as does China with 400,000,000 people. This means that our engineers have placed at the disposal of every American citizen forty mechanical slaves to work for him, to provide comforts and conveniences for him, and to give him more leisure time. Of course we know that some of our people do not control any of this mechanical power, while others control much of it, but, taken as a whole, our citizens have more material comforts and advantages than any other people in the world. We have reached this stage of prosperity and power largely through the energy, initiative, and training of our engineers.

Engineering demands such a wide range of knowledge, and applies to so many different fields of human activity, that there are a great many different engineering vocations. The best

known of these are: civil, electrical, mechanical, mining, metallurgical, chemical, aeronautic, and sanitary engineering. The basic training for all of these engineering vocations is essentially the same for at least the first two years in the various engineering departments and schools. A brief description of each type of engineering above mentioned will be given first, and then the opportunities, training, and possible income will be discussed.

The civil engineer. The earliest type of engineering is that connected with the measurement of land, and the construction of irrigation canals and artificial waterways in ancient Egypt, Assyria, and Babylonia. In the pioneer days of our own country, land surveying was one of the most important vocations, and the civil engineer followed very closely after the trapper and the squatter. He established the standard parallels and meridians, surveyed the land and measured it off into townships, sections, and quarter sections. He traced the courses of the rivers, made the maps, and in fact made possible the orderly settlement of the western country by laying out roads, and helping to settle land disputes by establishing boundaries, corner posts, and division lines for farms and city lots.

The civil engineer now spends his time in laying out lines of railroad, constructing dams for water conservation, developing irrigation systems, and in highway construction. The coming of the automobile has meant that people are more interested now than ever before in good roads. Millions of dollars each year are being spent in the building of concrete, bitulithic, and macadam highways. It is the civil engineer who plans and supervises the spending of this money. He must become a specialist in this type of work in order to build roads that will stand the wear and tear of the heavy traffic to which they are constantly subjected. The planning and construction of bridges is also a part of the railroad and highway builder's work, as well as the digging of tunnels through mountains to shorten railway lines, or to bring water from some mountain lake to supply the needs of a great city.

When the Simplon Tunnel through the Alps was dug, work was begun on both sides of the pass at once. The tunnel was over twelve miles long, but so accurate was the work of the surveyors that when the two work crews met, in the heart of the mountain, the ends fitted perfectly. The engineer cannot guess, he must know exactly how the project on which he is engaged is going to come out. A mistake of a fraction of an inch might mean the failure of a very expensive project.

A CLASS IN SURVEYING

The sanitary engineer. Sanitary engineering is closely related to civil engineering. The problems connected with keeping a great city supplied with pure water, disposing of garbage and refuse of all kinds, street cleaning and securing sewage systems are now so complicated that many men trained as civil engineers are specializing in sanitary or municipal engineering. In this capacity the engineer is adviser to the Board of Public Works, since he lays out streets, parks, drainage canals and sewer systems, conserves the city water supply, and protects it from contamination. He is usually a member of the City Plan-

ning Commission, and also either on the Board of Health or one of its chief advisers. It was due to the work of the sanitary engineers that the building of the Panama Canal became possible after repeated failures. It is due also to the sanitary engineers that our great cities are rapidly becoming the most healthful places in the world in which to live.

The electrical engineer. Since this is the age of electricity, many youths are attracted by the vocation of electrical engineering. Some electrical engineers devote their skill to the designing and manufacturing of electrical apparatus, and installing electrical machinery in heating, lighting, and power plants. Other electrical engineers spend all their time in laboratories in research work. The value of such work is recognized by the great power companies. Recently several of them combined their gifts and established a $500,000 research laboratory at Stanford University. This was done because Professor Harris J. Ryan, of that university, has made such notable contributions to knowledge in the field of high-voltage transmission. When the laboratory was opened Dr. Ryan released artificial bolts of lighting in which over two million volts of electricity were concentrated.

Electrical engineers have also played a most important part in the development of the telephone, both by wire and wireless, and the radio. Now the television and vitagraph are rapidly coming into use as the result of electrical and physical laboratory research. There are more problems to be solved than have ever yet been approached, hence there is great opportunity for gifted workers in this field, but the demands in native ability and training are so great that only a few may hope to qualify as electrical wizards.

The mechanical engineer. The mechanical engineer is engaged primarily with the problem of harnessing power for the performance of useful work. He designs, invents, or constructs machines of all sorts. He directs the construction of industrial and other plants where machinery is employed for manufacturing purposes. He is constantly on the lookout for ways of im

proving existing machinery, and it often happens that a costly machine, which seems to be doing excellent work, is scrapped because some mechanical engineer has developed a new machine that will perform the work more quickly and also more economically.

Some of the positions which are filled by trained mechanical engineers are as follows: draftsman, machine designer, production manager, master mechanic, operating engineer, efficiency engineer, research engineer, safety engineer, consulting engineer, director of public works, technical teacher. Men trained in the fundamentals of mechanical engineering may specialize in any of the above lines of work, or in others not mentioned but which involve application of power to transportation, heating, ventilation, refrigeration, or other mechanical devices. There is an endless variety of problems to engage the mind of the mechanical engineer, hence the field is a growing one, and a very attractive one to young men with a mechanical bent. This is particularly true in the fields of aërial navigation, and in the automotive industry.

The chemical engineer. The work of the research chemist was described in the chapter on Exploration and Research Vocations. There is, however, also a special field of chemical engineering. The chemical engineer is a chemist with engineering training who designs, constructs, and erects plants or works in which synthetic products are made, or where many processes involving chemical principles are employed in the manufacture of goods. The designer of chemical machinery and apparatus must know what materials will resist the chemical to be used in the machines. The manufacture of silk by synthetic processes, as well as many other widely used products, is opening up to the chemical engineer a wide and varied field of opportunity.

The mining and metallurgical engineer. The mining engineer handles the problems connected with mining or the extraction of minerals or mineral products from the earth, or, as in the case of salt, from the waters of the sea. He must understand the nature of the geological formations in which various

minerals may be found. He must know how to sink the shafts, dig the tunnels, or, in the case of petroleum, drive the wells necessary to get out the products. He must know how to analyze or assay minerals to determine their nature and value, as well as the best method of treatment.

As a metallurgist he will be called on to erect plants for the smelting or reduction of ores, or the refining of oils. He is also called upon to pass expert judgment on the probable value of mining prospects or potential oil-producing properties. For this purpose he needs to have an excellent command of written English, because the "prospectus" which he writes must not only be accurate and reliable, but readily understood by interested persons who may become investors. He also requires a great deal of administrative ability, because he may be called on to manage all the phases of a mining or oil development project. He may also be called on to make journeys of inspection which take him to wild regions in the remote portions of the earth.

Modern industry requires an enormous tonnage of metals. The supply of iron, copper, zinc, and other metals must be kept up through new discoveries, or by improved methods of extracting these metals from low-grade ores. New supplies of petroleum, and better methods of conserving present supplies, also must be found. This means that the mining engineer has an ever enlarging field of activities.

2. *Training, opportunities, and income*

Training. A great many boys seem to have the idea that all one needs to become an engineer is a knowledge of mathematics and the ability to handle a surveyor's transit. As a matter of fact, engineering is such a technical and complicated vocation, and demands so much in the way of maturity, stability, and resourcefulness, that at least two years of general cultural training above graduation from high school is usually required before even beginning the specialized engineering courses. Training is practically the same for the first two or

three years for all branches of engineering. It includes mathematics through calculus and theoretical mechanics, linear drawing, mechanical drawing, lettering, descriptive geometry, and surveying. Courses in chemistry and physics are required during the first two years, while courses in English, economics, history, and foreign languages are recommended. During the third year courses in mechanics of materials, hydraulics, and geology are taken.

After the third year the engineer usually specializes along the lines of his chief interest. The civil and sanitary engineer specializes in highway construction, railroad surveying, irrigation, sanitation, etc. The mechanical engineer makes the rounds of the various shops, studies machine design, applied mechanics, testing of materials, and thermodynamics, and takes advanced courses in physics and chemistry.

The student who specializes in electrical engineering majors first in mechanical engineering and often takes his A.B. degree in that field, with the equivalent of a minor in electrical subjects. To secure the degree of Electrical Engineer, requires from one to two years of graduate work beyond the A.B. degree. Most of the time during these years is devoted to advanced theoretical principles of electricity, and to experimental laboratory technique. Many students spend several years in practical engineering experience before returning for the specialized year, or two years, in electrical engineering.

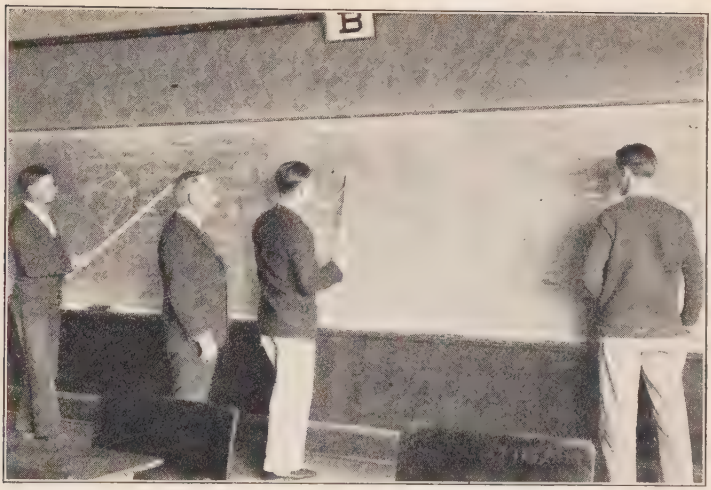
The mining engineer usually majors in geology for his undergraduate work, securing his A.B. degree in that department, but carries also considerable work in mechanical and electrical engineering courses. The degree of M.E., or Mining Engineer, is not earned until one or two years of graduate study have been devoted to the special courses that relate to the technique of mining and metallurgy.

Personal characteristics. The engineer requires all of the traits of character that are essential to success in any profession. He should, however, possess in an unmistakable way qualities of leadership, moral courage, physical stamina, mental alert-

ness, inventiveness, ability to get along with and manage men, and resourcefulness in the face of difficulty. The engineer is essentially a problem-solver. He must have the habitual attitude of optimism which holds that "the only difference between the possible and the impossible is that the impossible takes a little longer." The words "failure" and "it cannot be done" have been cut out of the modern engineer's dictionary. In order to accomplish the engineer's course of training, mathematical ability of a rather exceptional quality is necessary, as well as an interest in and a talent for mechanical operations and manipulations. The engineer must be able to understand how mechanical processes are performed, whether he is capable of becoming an expert mechanical worker or not.

Perhaps the most necessary qualification of an engineer is that of imagination. He must be able to see just how the machine, or the bridge, or the dam, or whatever it is that he is working on will look when completed. He must be able to draw up the plans or sketch the design for others to use in the actual work of construction. Then, too, the engineer must have the capacity for sound judgment. This, of course, is gained in part by experience, but it is the result of adequate training, and the constant habit of thinking all problems through to the end, and testing conclusions by every available means before pronouncing an opinion. Sound technical training, coupled with good judgment in planning, and daring and resourcefulness in the execution of plans, make the most successful engineers.

Opportunities. The creation of a network of good roads, the laying out of parks, the erection of sewage-disposal plants, the development of great irrigation and flood-control projects, as well as the expansion of our railway systems, will continue to provide a growing field of employment for competent civil engineers. Electrical engineers will find opportunities for service in connection with the improvement and construction of electrical machinery, in the invention of new ways of utilizing electric current for the transmission of power, and in the per-



THE ENGINEER NEEDS A SOLID FOUNDATION IN MATHEMATICS

fecting of such universally necessary devices as the telephone, the telegraph, and the radio.

The work of the mechanical engineer is basic to the progress of almost every industrial vocation. By inventing new ways to make machines do the work of men, he releases more and more of the time of man for improvement through the wise use of leisure. Without him, mechanical industry would halt, go lame, and ultimately become hopelessly crippled. The mining engineer is the scout for the raw materials of mechanical industry. He must find new supplies of iron ore, of gold and silver, of zinc and lead, of coal and oil. Having found these raw materials in their native state he must find the ways of getting them out of the ground and preparing them for use in the industries.

The activities outlined above call for many trained engineers, but not all of those who have taken engineering courses can hope to become chief engineers. Many must be content to become chief draftsmen, designers, inspectors, operating en-

gineers, sales engineers, metallurgists, assayers, geologists, mine foremen, mine superintendents, shop foremen, shop superintendents, or professors of engineering in colleges and universities.

Income. The young engineering graduate must look forward to a testing time when he will start at the bottom of the ladder and prove his capacity for work and responsibility. He usually starts in as a draftsman, designer, or office assistant. Some large corporations have an arrangement whereby they take a limited number of engineering graduates and pay them small salaries, while giving them practical training courses in the type of work required for engineers.

The expectation is that the young engineer will be given an opportunity to show what he can do, and if satisfactory will be given permanent employment. Such contracts are usually favorable, but occasionally such openings lead into an occupational blind alley and the apprentices are kept at tasks which fail to develop their powers or result in promotion. Engineering graduates receive an average of about $1500 to $1800 during their first year of service. In from three to five years after they are out of college the average rises to around $3000 per year, and after ten years to between $4000 and $5000, with the average nearer $4000 than the larger figure. Distinguished engineers have incomes of from $25,000 to $100,000 per year.

Numbers engaged. The 1920 Census reports the following numbers for the engineering groups:

Vocations	Men	Women	Both
Civil engineers	64,642	18	64,660
Electrical engineers	27,065	12	27,077
Mechanical engineers	37,678	11	37,689
Mining engineers	6,695	..	6,695
Totals	136,080	41	136,121

Engineering appears to be a profession into which very few women have entered. However, there were 41 reported in 1920, and only 11 women reported as engineers in 1910. Also

in Chapter XVII there were 1985 women listed as workers at mechanical drafting. This was six times as many women workers in that field as were reported in 1910, and would indicate that women are becoming interested in engineering and the allied vocations. At least one woman has won distinction in the field of efficiency engineering, and is a member of the American Society of Engineers.

The field of civil engineering, which includes sanitary, highway, railroad, irrigation, and several other branches, still affords the largest field of opportunity, so far as numbers engaged is concerned, with mechanical engineering second, electrical third, and mining fourth.

With the rapid industrial development of this country along all lines requiring engineering skill, it is certain that there will be a growing demand for well-trained engineers. The appeal of the engineering professions is so great that there are probably more boys in our high schools interested in that group of vocations than in any other single group. This condition has been noted for the past fifteen years, and engineering schools have been crowded with ambitious young men seeking training. The course of study is difficult, the "wash-outs" are numerous, and the engineering schools are only graduating about 9000 students per year. In view of the numbers engaged, and the fact that administrative, technical, and advisory positions in the business world are now calling for men with engineering training, the supply of trained and competent engineers probably does not greatly exceed the demand.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. When Athens was at its best there were nine slaves for every freeman. That was the golden age of sculpture, poetry, and philosophy. If, as stated in this chapter, each American has forty mechanical slaves working for him, is there any reason why we should not have a golden age also? If it comes, will it be in the realms of poetry, philosophy, oratory, and sculpture?
2. Why will the civil engineer continue to find use for his services, even though government land worth having is all surveyed?

3. There are now more cases of typhoid fever which originate in rural districts than there are which originate in city districts. Why is this?
4. Is the training that one gets for the vocation of electrician a good foundation for the type of training required of an electrical engineer?
5. Why is it necessary for the mechanical engineer to have the equivalent of two years of shop experience, covering wood-working, metal and machine shop, as a part of his engineering course?
6. John Hays Hammond was a famous mining engineer. Find out all you can about him.
7. When coal is all gone, what fuel will take its place? Which type of engineer will probably solve the problem?
8. Was the professor of geology wrong when he insisted that mining engineers should be able to write high quality English?
9. There are 100 colleges of engineering which admit women on the same terms with men, but only about 150 women students in engineering are registered in these colleges. Why is this?
10. Does the young engineer have as long a period of poor pay and waiting for recognition as does the young lawyer, or the young doctor?
11. Are there openings in the engineering fields for persons with just two years of training beyond high school? What are some of these openings, and where can one find the preparation?
12. What types of positions in business and industrial houses do men trained in engineering occupy?

SELECTED REFERENCES

1. Bernays, E. L.: *An Outline of Careers*, 135–40 (engineering).
2. Fryer, Douglas: *Vocational Self-Guidance*, 275–87 (engineering).
3. Hammond, John Hays: *The Engineer.*
4. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 329–58 (engineering).
5. Horton, C. M.: *Opportunities in Engineering.*
6. Platt and Farnham: *The Book of Opportunities*, 331–38 (engineering).
7. Rosengarten, Wm.: *Choosing Your Life-Work*, 164–69 (engineering).
8. Stanford University Bulletin: *Vocational Information*, 97–106 (civil); 107–10 (electrical); 111–15 (mechanical); 116–20 (mining).

CHAPTER XXI

LEGAL AND CIVIC VOCATIONS

1. *Nature of the work*

Introducing the reign of law. The cave man settled his disputes with a club. Among semi-civilized people the chief of the tribe enforced tribal customs, settled disputes and imposed penalties upon those who broke tribal laws. In the Middle Ages a favorite method was that of trial by battle, in which the disputants entered the lists against each other, and the winner in the fight was awarded the verdict in the lawsuit. In all modern civilized countries courts of justice have been provided, in which men may have their disputes over property or personal rights settled in an orderly fashion, and the judgment of the court is enforced by civic officers.

These officers need to be trained for their work, and to give all of their time to their duties. This means that they must be paid for their services. Taxes must be levied and collected to pay those who administer the laws and protect society from its enemies. Hence we have, in addition to the judges and lawyers who look after the courts, a great many different kinds of civic officials who handle the machinery of local, county, state, and national government. In this chapter we are to consider a number of these vocations, because they are all closely related to each other.

The lawyer. The lawyer advises people in regard to their legal rights, and, when it is necessary to take a case into court, he prepares all necessary papers and represents his client at the trial. He must maintain an office where people can come to consult him, and have a good working library of law books, court reports, and other legal documents. In the court room he examines witnesses and sees that necessary evidence is presented in the way that will be most effective. He sums up the evidence for jury or judge, sees that his opponent's lawyer does

not take advantage of his client, and finally argues the legal points that may arise in the conduct of the case. In his office he draws up every sort of legal document relating to wills, deeds, contracts, mortgages, or other types of conveyance. He examines titles to property to see that there are no flaws that might cause his client loss.

The lawyer, like the doctor, may be either a general practitioner or a specialist. The general practitioner carries on the activities outlined in the preceding paragraph. The specialist may handle only criminal cases, where he defends persons accused of offenses against society. This is perhaps the most spectacular legal specialty, but it is open to the most serious temptations. Unscrupulous lawyers frequently are retained by organized criminal gangs to defend their members. They resort to every trick and device to defeat justice and free their clients. Much of our present wave of crime is due to the perversion of their office by criminal lawyers. No young man should enter this field unless he is positive that he has the strength of character to withstand its severe temptations.

Other legal specialties have to do with damage cases, such as suits resulting from accidents; real-estate law, involving passing upon titles and conveyances; patent law, where persons seeking to patent inventions, secure copyrights, and register trademarks, come for advice; admiralty law, which pertains to ocean trade, sea accidents, or shipping interests; and corporation law, which deals with the legal aspects of corporation management.

How to become a lawyer. It used to be the general custom, in order to become a lawyer, to enter a law office, study for a few years, and then take a bar examination. Now the great majority of lawyers enter a law school, after completing at least two year of college, and take a three-year law course. Some universities, such as Harvard, Pennsylvania, Pittsburgh, Michigan, and Stanford, have law schools which demand an A.B. degree as a condition of entrance. Since the lawyer deals with every conceivable human relationship, he needs a broad general background. He

should have some acquaintance with the physical and biological sciences, and with mathematics, literature, and foreign language. He should give special attention to vocal expression and English composition. Political and social sciences, or history, should be his undergraduate major subjects.

The young lawyer usually has a "starvation period," during which he is establishing himself. He sometimes enters the office of an older lawyer as a law clerk. Sometimes he goes to a county-seat town and hangs out his shingle, taking justice-court cases, collecting accounts, and doing all sorts of odd legal jobs to make a living until clients begin to come his way.

What does the lawyer earn? Returns from law-school graduates, who have been out at least ten years, indicate that the first year's earnings will be less than $1000; that the fifth year's income will be in the neighborhood of $3000, and that the tenth year will bring in between $6000 and $7000. Very few lawyers earn over $10,000 a year, although a few corporation advisers receive very high retainers.

Advantages and disadvantages. Among the advantages of the law as a profession may be mentioned the chance that the lawyer has of becoming a judge on the bench, one of the most dignified and responsible positions that society has to offer. He also frequently is called upon to serve in other civic capacities, such as representative in state and national legislatures, and as mayor of his city or governor of his State. The quality of aggressiveness, which helps a lawyer to succeed, also singles him out as a leader of men. More than one half of our Presidents have been lawyers.

The chief disadvantage of the law is that the profession is very much overcrowded. This overcrowded condition is in itself a source of temptation. The man with legal training knows not only how to interpret the law, but also how to advise a client to slip through a loophole in the law, or to evade the law's penalties. Such men pervert the law and become leeches on society, rather than defenders of the law, as they should be.

The law is, however, a noble profession, and young men and

women possessing analytical minds, great powers of concentration, ability to gather information quickly from the printed page, the habit of persistent study, and a considerable amount of personal aggressiveness may hope to succeed.

Public officials. There are nearly a million people in this country employed by the Government — national, state, and municipal. Since these people are doing every conceivable kind of work it will not be possible to describe each of the types of civic service; instead, only those which are somewhat distinct from other lines of employment will be considered.

Elective national officials. In the service of the United States Government the only elective officials are the President and Vice-President[1] of the United States, and the members of the National Congress.

The President. The person who occupies this office is one of the most powerful public officials in the world. He appoints Supreme Court Justices, cabinet members, ministers and ambassadors to other lands, governors of territories, United States marshals, postmasters, and, through the heads of departments, all of the thousands of civil service workers employed by the National Government. He can veto legislation passed by the Congress of the United States and in time of war he is commander-in-chief of the army and the navy. Through his Secretary of State he negotiates treaties with other countries. His appointments and also the treaties which he makes have to be confirmed by the Senate, but he is usually able to carry out his purposes, unless the Congress is heavily against him. It is one of the most difficult positions in the world to fill satisfactorily, because the eyes of his own people and most of the civilized world are upon him. He is criticized for every act by those opposed to him, and blamed by his own party if his policies do not prove to be popular. To be elected he must be a native of this country and at least thirty-five years of age. He has generally rendered distinguished service either as governor of his State, as a member of Congress, or as a conspicuous

[1] The Vice-President presides over the Senate, and succeeds the President in case of his death or removal from office.

leader of some popular movement. The President receives a salary of $75,000 a year, $25,000 additional for traveling expenses, and has the use of the White House, which is maintained at public expense.

Members of Congress. There are ninety-six *Senators*, two for each State. They are elected for terms of six years, must be citizens of the United States, be at least thirty years of age, and they each receive a salary of $10,000 a year. Because of their small number, long term, and power in confirming or rejecting nominations or treaties offered by the President, Senators are regarded as holding the highest elective positions in the gift of the people, next to that of the President. Only men who have been very successful in their vocations, or persons who have rendered unusual public service as state officials, can hope to be elected to the United States Senate.

The *House of Representatives* has 435 members, each State being represented according to the size of its population. Members are elected for a term of two years, must be American citizens, be at least twenty-five years of age, and they receive the same salaries as those paid to United States Senators. Notable service in a state legislature, leadership in some reform movement, or pronounced advocacy of some national issue may result in election to the House of Representatives.

Elective state and municipal officials: Governors. Each State has a governor, who is elected by popular vote. He administers the laws, represents the State on all official occasions, appoints many minor state officials, including members of such commissions as the Public Service Commission, and usually appoints the heads of state penal, reformatory, and charitable institutions. He has power to veto laws, passed by the legislature, and is commander-in-chief of the state militia. Governors have the best chance of any elected officials of becoming President of the United States. Especially is this true if they are acknowledged political leaders in a large State, the carrying of which might decide a national election. A popular salary for the governor of a State seems to be $10,000 per year, and the use

of the executive mansion. The governor of the State of Washington receives just as much salary as the governor of the State of New York. Men do not seek such office for the salaries, but for the power, influence, and prestige which the office brings to them. Men are not often elected to such office until past middle life, and they must have made a marked success of some other calling. There have been two women elected to governorships in this country.

Other state officials. The state treasurer, the secretary of state, the state auditor, the attorney-general, the superintendent of schools, and other heads of state departments are customarily elective officers, and may or may not be of the same party with the governor. They are frequently men who have rendered similar service for their counties, and through party service have come to be known in the State at large. Their salaries range from $2500 to $8000 per year. The American people are noted for holding down their public officials to very low salaries, compared with what men of equal ability can earn in private business or professional service. Yet there is never any scarcity of candidates for all offices at election time. Terms of office are two to four years.

Members of the state legislature. State Senators and Representatives receive very small pay, usually five or ten dollars a day and mileage to and from the state capital, and this in the majority of the States only during the session, which comes every two years. A person does not give up his vocation to serve in the legislature, but usually has to sacrifice his business temporarily while serving his county or district in that capacity.

Judges of the state courts. The judges of the superior courts, district courts, or state supreme courts are elected in nearly all the States in this country, and for terms of from four to ten years. Most of the States now elect their judges on a non-partisan ballot, and continue good men in office term after term. Their salaries range from $3600 per year to $15,000. The higher figure is paid to state judges only in States such as

New York and Pennsylvania. Probably the middle fifty per cent of judges receive salaries of from $4500 to $6000 per year. Judges are elected from among the State's most distinguished lawyers, especially those who have earned enough of a competence to be able to serve the State for the small salaries paid to judges and other state officials.

County officials. Every county has a number of paid officials who are elected to their offices by the people. County treasurers, county auditors, county clerks, sheriffs, surveyors, and coroners. The titles indicate the nature of their duties. The regular business of the county is carried on by these officials. The salaries depend upon the size and wealth of the county. The officials of some of the smaller or poorer counties are paid the barest sort of living, while in wealthy counties, in which large cities are located, the county officials receive salaries as large, and in some instances larger, than corresponding state officials. Uncertain tenure, the necessity of standing for election at intervals of from two to four years, with the worry and expense involved, and the relatively small pay, render the vocations connected with county government comparatively unattractive.

City officials. City government is carried on by mayors, councilmen or supervisors, and other officials, such as auditors, assessors, treasurers, attorneys, engineers, and so forth. More often than in the case of county officials, all subordinate officers, below the mayor and councilmen, are appointed. Duties correspond to those of similar state and county officials, and salaries depend upon the size and wealth of the city. For reasons, which you have probably discussed in your classes in community civics, city government in the United States is least efficiently handled, and as a result city offices are not so sought after by those who have been successful in the ordinary vocations of life. This means that elective positions in city government are filled, more often than not, by professional politicians.

Non-elective civic vocations: The government civil service. There are two branches of the civil service — the unclassified,

and the classified. Under the unclassified, no competitive examinations are held. Appointment is made and certified by the Civil Service Commission. By far the greater number of government positions come under the classified head, and appointments are made from a list of those attaining the highest marks in the competitive examinations. Some sixty thousand appointments are made every year. Those interested in specific civil service positions should apply directly to the Civil Service Commission, Washington, D.C., for information circulars, or ask the local postmaster for the name of the district secretary for your locality.

Civil service covers every type of work from that of the unskilled or semi-skilled laborer to that of the most highly trained scientist. Among the different types of service under the Government the following are mentioned as typical of the great variety of opportunities open to those interested in government service: Indian Service, Land Office, National Park, Forestry, Geological Survey, Lighthouse and Coast Guard, Customs, Internal Revenue, Coast and Geodetic Survey, Immigration, Public Health, Weather Bureau, Panama Canal, Railroad Labor Board, Railway Mail, Postal Service, and so forth.

The forestry service. There are some positions under the civil service that are more attractive than others. The forestry service is one of these. This work appeals especially to those who love a life in the open. The forester acts as guardian and protector of the game and other animals of the national forest areas, plans and builds trails, guards against fire hazards, and prevents destructive cutting of forest trees. A full-fledged forester must have a special college training, but one may become a forest ranger with considerably less preparation. Salaries for rangers are from $1100 to $1600. Foresters receive from $2500 to $5000, depending upon training, service, and responsibility.

The coast life-guard service. The coast life-guard service is another line of government service carrying small pay, but

affording excellent opportunity for the qualities of nerve, courage, and strength. College boys who are expert swimmers often find employment in this service during summer vacations as special life-guards at recreation parks and beaches.

THE UNIVERSITY WHERE PRESIDENT HOOVER RECEIVED HIS TRAINING AS A MINING ENGINEER

Young people are being trained there for Law, Medicine, Education, and other Professions

City and municipal civil service. As in the government civil service, there are a great many types of city and municipal service for entrance to which civil-service examinations are necessary. The predominating vocations, however, are of a clerical character, with a few of the departmental heads in the Law, Health, and Public Works departments coming under civil service regulations.

Police and firemen, in the municipal vocations, usually come under civil service. Work in these departments demands courage, self-control, and loyalty to superior officers. Pay of rank and file runs from $1500 to $2400, with higher pay for various grades of officers.

Among the advantages of working under civil service may be cited permanence of position. After the probationary period has been passed the tenure is permanent, during good behavior; the pay, though small, is regularly increased up to a comfortable maximum. The hours are short, vacations are assured, and provision is made for retiring allowances. Promotion, though slow, is relatively sure.

The disadvantages are also serious. Promotion to the highest grades is unlikely. A person is never his own master. The incentive for strenuous effort is rather small, and the worker is very apt to lose ambition and initiative and become a mere cog in a great machine. Entrance salaries are between $1000 and $1200. Very few persons, under civil-service tenure, receive salaries over $4500 per year. Heads of bureaus and departments, whose salaries range from $7500 to $10,000, usually receive appointment directly from the government official under whom they work.

Diplomatic and consular service. The foreign service is under the direct supervision of the Secretary of State. *The diplomatic service* is primarily concerned with the political interests of the United States, and *the consular service* is engaged in developing and conserving the commercial interests of the country. The lower offices in the diplomatic service have for many years been on the merit basis, that is, promotions being made from lower to higher positions as a reward for efficient service. The higher positions, ministers and ambassadors, were almost always appointed on a political basis, that is, from the ruling political party's membership and as a reward for party service. Since 1920, however, there has been a disposition to increase the merit appointments. During the Harding and Coolidge administrations there have been thirty-six merit appointments, as against ten political appointments. This means that young men can now think of diplomacy as a career, and make definite preparation for the foreign service as they would for the law, medicine, or engineering.

Life in the diplomatic and consular service is varied and

interesting. One has an opportunity to live in the capital city of the country to which he is sent, and to come in contact with its social and cultural life. Since the Government is undertaking to provide official residences for its ministers and ambassadors, it is now possible for a person of ordinary means to accept a high diplomatic post. Formerly only the very rich could afford to accept appointments to foreign capitals on account of the high cost of maintaining one's official residence.

Persons desiring to enter the diplomatic and consular service are given a preliminary examination. Those standing highest on this examination are given a year of preliminary training in a special school in Washington, D.C., before being assigned to various fields. Entering salaries for interpreters, consular assistants, and clerks in the diplomatic service are from $1500 to $1800. Diplomatic secretaries receive up to $4000, consuls up to $8000, consuls general up to $12,000, and ministers and ambassadors from $10,000 to $25,000. For all positions above the grade of clerks and stenographers, college preparation, with particular attention to history, economics, and foreign languages, is almost a necessity.

Military service. Ever since colonial days we have had a national aversion to a large standing army. This has led us to provide for a small but highly trained body of regular soldiers, all of whom serve voluntarily. In times of emergency great armies have been raised by the volunteer or the selective-draft method. The same idea prevailed in regard to the navy until we came to have island possessions, such as Hawaii, the Philippines, and Porto Rico. The possession of these colonies, together with the opening of the Panama Canal, have resulted in the development of a large navy for the protection of our commerce. Another branch of the military service, which has now assumed great proportions, is that of aviation.

The army. The infantry are the foot soldiers. They make up the largest portion of any army and constitute its real backbone. The cavalry are mounted soldiers; the field artillerymen are mounted soldiers in charge of field guns and light cannon;

the artillerymen are in charge of heavy cannon; and the coast artillery have charge of the big coast defense guns. Army engineers do the surveying, mapping, planning, and construction of fortifications, bridges, and army camps. The signal corps handle the installation and operation of telephone, telegraph, and radio systems, and are responsible for intercommunication.

Garrison training includes all sorts of athletics, indoor and outdoor sports, and regular drill in all the aspects of the soldiers' routine duties. Every man is under strict discipline and lives according to definitely prescribed rules. The life of the enlisted man is not particularly attractive. The pay is small, from $21 to $126 per month, with board and equipment provided, and certain bonuses for reënlistment. Warrant officers receive from $100 to $185 per month, depending upon grade and length of service. There are, for the serious-minded enlisted men, many opportunities for study and improvement. There is a certain amount of variety and adventure in the soldier's life, and he frequently has the opportunity to see other lands, when engaged in colonial service. For those who remain permanently in the service there is the certainty of an old-age pension.

Army officers. Nearly all army officers are trained at the West Point Military Academy. Candidates are nominated by Congressmen from the various States, or by military commanders from among their privates and non-commissioned officers. All must take a severe competitive examination in subjects corresponding with regular high-school subjects, and also pass a rigid physical examination. If successful in the competition they are appointed to the Academy, and receive an annual allowance during the period of their studies. Those who graduate are appointed to positions as second lieutenants, and are expected to serve in the regular army for at least three years. Another method of becoming an army officer is by direct appointment from the ranks by the President, on recommendation of superior officers. Promotion is slow, except in time of war, and the pay is small compared with other profes-

sions demanding similar training. Base pay ranges from $1600 to $1900 for second lieutenants, to $8000 for major-generals. There are certain allowances for quarters, and certain discounts in the purchase of goods and supplies, which make these salaries really higher than they seem. Liberal pensions, upon retirement, are also to be counted as part of the compensation of an army officer.

The navy. Service in the United States Navy has a strong appeal to boys, especially to those who live in the interior States. There has been inaugurated a very definite policy of affording every opportunity for the learning of a trade or securing various types of educational advantage during one's naval enlistment. Every year there are some fifteen hundred recruits enlisted in the navy. There are naval training schools in nearly every important seaport, and in these the new "rookies" are given preliminary training. A naval enlistment of four years gives a young man an opportunity to see the world, to learn a trade, and to decide whether he wants to follow the sea either as a navy "gob," an artisan, a yeoman, or whether he will try to win an appointment to Annapolis and become a naval officer.

Appointment to the Naval Academy is about the same as for the Military Academy. The training is just as rigid, and, if anything, more technical. The present-day naval officer must not only be a navigator, but an electrical and mechanical engineer as well. Those who graduate enter the navy as ensigns, and are eligible for promotion to the higher grades, as in the army. Base pay is about the same also for corresponding ranks as in the army.

The Marine Corps. Marines are a kind of combination of soldier and sailor. Their training is primarily that of the soldier, and their particular function is that of being the first to land when it is necessary to send troops ashore for fighting purposes. The marines have a distinct system of training, and a fighting spirit which has given them the popular name of "devil-dogs."

Military aviation. Perhaps the most fascinating branch of military service is that connected with aircraft. Military and naval airplanes are used both for observation and attack, and are usually manned by two men, a pilot and an observer. The pilot handles the plane in flight, while the observer observes the movements of enemy troops or ships, takes aërial photographs, makes maps, and takes minute notes of what he sees. He must also be able to operate the radio, and handle whatever weapons of offense or defense may be necessary in carrying out the purposes of the flight.

Military aviators and observers need not only courage and rigid training, but they must have initiative and independent judgment. When ordered to accomplish a specific objective, they are left to their own devices for executing the commands. Training is to be had in several government Ground Schools, and Field Officers' Training Schools. Aviators in government service receive higher pay than soldiers and sailors, partly because the work is much more hazardous, and partly because the right combination of qualities is much harder to find than in the case of the other branches of the service.

2. *Numbers engaged in legal and civic vocations*

Lawyers. There are fewer lawyers in the United States to-day, in proportion to population, than there were in 1880. This might seem to indicate that the legal profession was less crowded than formerly, and that the 125,000 lawyers would have an easier time making a living than used to be the case. The lawyer now, however, has a harder time to make ends meet because the cost of books, rent, clerical service, and general living are so much higher than in 1880. Also the investment in training is much higher now, since he must have four years of high school, two to four years of college, and two or three years of law-school education. Women lawyers now number about 2000. A woman was recently elected to a superior judgeship in Ohio.

Public officials. There are about 425,000 classified civil-

service positions under the United States Government, and some 135,000 government positions outside of the classified service. In addition, there are some 260,000 soldiers, sailors, marines, and military aviation personnel, making a total of 820,000 persons engaged in government service.

Working for States, counties, and cities there are 75,000 officials in administrative and clerical positions; about 200,000 sheriffs, policemen, firemen, and guards; and 25,000 persons holding miscellaneous positions, bringing the total up to 300,000 in round numbers.

The total number of persons engaged in civic vocations, then, outside the legal profession, is approximately 1,112,000. This means that about one person out of every one hundred in our population is working for a municipality, a county, or for the State, or the National Government.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. If you are acquainted with a lawyer, ask him to permit you to come to his office some day to see just what goes on there. Ask him also to tell you what kind of preparation he had for his profession, how long it took, about how much it cost him to get it.
2. If there is a county courthouse near your home, find out when court is going to be in session, and arrange with your teacher for those in the class who are thinking of studying law to visit the courtroom during the trial of a case. Take notes, and report back to the class on what you saw and heard.
3. Interview some public official, county or state. Find out what his duties are, how long his term is, if elective, and whether he is under civil service, if appointive.
4. If it costs more to be elected to a state or county official position than the first year's salary amounts to, see if you can discover why people are so anxious to hold public office.
5. Try to have a talk with a regular soldier of the United States Army, a navy "gob," or one of the privates in the Marine Corps. Find out how their actual experience compares with the attractive items mentioned in the colored lithographs employed by the recruiting officers.
6. Ask a policeman or a fireman what he thinks about his job as a

life-work. Find out all you can about the duties, dangers, and difficulties connected with these callings, as well as the attractions, such as wearing a uniform and carrying a "night stick."

7. Have your teacher, in behalf of the class, write to the Secretary of State, Washington, D.C., for detailed information about the diplomatic and consular service; what the qualifications are, what training is necessary, and how to make the first contacts.
8. Suggest other vocations, not mentioned in this chapter, which properly belong among the legal-civic group of vocations. Write a brief paper about one of these vocations which has been omitted, giving information that a person would want to have who was thinking about it as a life-work.

SELECTED REFERENCES

1. Allen, F. J.: *Law as a Vocation.*
2. Baldwin, Simeon E.: *The Young Man and the Law.*
3. Bernays, E. L.: *An Outline of Careers*, 89–98 (civil service); 147–62 (diplomatic service); 205–15 (law); 243–58 (army and navy).
4. Cahalane, Cornelius F.: *The Policeman.*
5. Filene, Catherine: *Careers for Women*, 273–92 (law); 395–98 (politics).
6. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 429–50 (law); 659–63 (government service).
7. O'Reilly, J.: *How to Become a Fireman.*
8. Platt and Farnham: *The Book of Opportunities*, 395–401 (police); 401–03 (fireman); 404–14 (army and navy); 415–20 (judiciary and legal); 421–23 (legislative); 423–29 (revenue and postal service); 429–32 (diplomatic); 432–53 (administrative).
9. Rosengarten, Wm.: *Choosing Your Life-Work*, 138–43 (civil service); 187–91 (law); 210–16 (military service).
10. Stanford University Bulletin: *Vocational Information*, 121–24 (civil service); 125–28 (diplomatic service); 128–31 (municipal service); 139–44 (law).

CHAPTER XXII

HEALTH AND HEALING VOCATIONS

1. *Nature of the work*

THERE are a great many people engaged in the vocations which have to do with keeping people well, or curing them once they have become ill. The healing art has always been respected among men, and those who practice it skillfully have always been counted among the most useful persons in a community. The field of service is now so varied, and the social and economic value of these vocations is so great, that we are devoting this chapter to a discussion of the opportunities to be found in life-careers devoted to health and healing.

The physician and surgeon. When most of us hear the word doctor, we think of the man who put a little glass tube in our mouths, held our hand and looked at his watch, when we had the measles. That was the family physician. He was present when we were born; he pulled us through our babyhood ills; he tended us in contagious diseases; he advised our parents how to keep us well; probably he gave us a lot of sound advice regarding health and hygiene while we were growing up. We did not think much about it at the time, but now we know how much his skill, his thoughtfulness, and his kindly counsel aided us to grow up strong, healthy, and useful.

The family physician is still the central figure in the medical profession, but he has many helpers now. If he is unable to tell what is the matter with you, he calls in another doctor who is a specialist in diagnosing, or discovering what certain symptoms mean. He is then able to prescribe the proper treatment. Sometimes the family doctor finds that the only thing that will help a patient is an operation. If it is a minor or simple operation, he is usually able to perform it himself, but if it is a serious or major operation, he calls in a surgeon, who is a specialist in that type of operation. Hence we have di-

agnosticians, stomach, eye, ear, nose, orthopedic, lung, heart, and other specialists, who make a life study of certain parts of the human anatomy and devote themselves exclusively to dealing with cases which involve that particular organ or disease.

The general practitioner is the servant of all. He is called out at every hour of the day or night. He has to face all sorts of danger from contagious and infectious diseases. He is under obligation to aid in emergencies involving life and death, whether he receives compensation or not. If he makes a discovery in the treatment of disease which means a quicker or a surer cure, he does not patent it and enrich himself, but publishes the process or the formula in some medical journal for the benefit of the public. He needs a strong body, steady nerves, a cheerful disposition, and a spirit of social service in order to become the best type of family physician.

The specialist usually has definite office hours, during which people can come to him for consultation. He has spent a great deal of time in the study of his specialty and has in his laboratory every facility for treating and diagnosing cases in his field. On this account he is not exposed to the same dangers and inconveniences as those which beset the family physician. He is, however, under obligation to devote more time to intensive study and experimentation in order to maintain his standing as a special authority. Because the specialist has his patients come to him, instead of going to them, and also because the fees which he receives are reported to be rather large, most young doctors are ambitious to become specialists eventually. The truth is, however, that the field of the specialist is overcrowded, and the field of the general practitioner offers the best opportunities to the young man just out of medical college.

Healing specialists. In addition to the regular doctors, whether general practitioners or specialists, there are those who practice the art of healing without medicine or surgery. One of these is the *osteopath*, who believes that most illness is

caused by pressure of bones upon nerves. His treatment consists of manipulating bones and muscles, especially by vigorous massage, and the application of various types of braces and other means of removing pressure upon nervous centers.

Another new form of healing is *chiropractic.* The chiropractor thinks of most ills as originating in some spinal curvature or deformity which causes pressure. He undertakes to make adjustments in vertebræ which he finds out of alignment, and thus to remove nervous ills.

Mental healing is based on the theory that most of the ills to which flesh is heir are traceable to mental causes. The theory is that if a person can be made to believe that there is nothing the matter with him his ills will disappear. The great danger with all these types of healing is that people without sufficient training will practice them and do much more harm than good. No one should undertake to practice the art of healing who has not had basic training in human anatomy and the diagnosis of disease.

The dentist. The dentist helps to safeguard health by looking after teeth. It used to be thought that the only remedy for a tooth that ached was to pull it out. When too few teeth were left to be of any use, they were all extracted and a set of false teeth was made for the patient. Now, however, the best dentists employ every scientific means to preserve the teeth. They "scale" them, they fill them, and they treat them for certain diseases which tend to make them loose, even though sound. The dentist and the family doctor coöperate to keep us in good physical condition. If our teeth are sound we can masticate our food properly, and thus promote good digestion. If our teeth are in poor condition our health is likely to suffer, and we cannot do our work as well as we should.

The dentist has an office, fitted up with all sorts of electric devices necessary to the filling and care of the teeth. He also maintains a laboratory where plates, bridges, and other substitutes for real teeth are made. He must know how to make these things himself, but as his practice grows he employs a

dental mechanic to do this part of his work for him. Successful dental work requires great mechanical skill, sound nerves, quick eyesight, and good physique. The dentist must stand for hours at a time in performing his services, and although his hours are more regular than those of the family physician, his duties are more exacting and nerve trying. As soon as his eyesight and his nerves fail him, the dentist must find other employment.

CHILDREN'S HOSPITAL WHERE CRIPPLED CHILDREN CAN HAVE THE BEST OF CARE AT LOW COST

Notice how clean everything is and how beautiful the decorations are

The bacteriologist and the serologist. The diagnosis of disease requires chemical and biological analysis. Bacteriology deals with the structure and habits of bacteria, yeasts, molds, and protozoa. Serology deals with the reactions of blood serum in the presence of foreign substances. It is concerned

with the development, also, of serums for the treatment of such diseases as diphtheria, typhoid, and smallpox. The development of these sciences has resulted in putting weapons in the hands of our physicians with which they are able to fight contagious diseases and plagues. The United States was able to build the Panama Canal, not only because we had great engineers, but also because we had great physicians and sanitary engineers who cleared the Canal Zone of malaria, yellow fever, and other tropical diseases.

The practicing physician, the surgeon, and the specialist in every field need to keep in touch with what the bacteriologists and serologists are discovering in their laboratories. During the Spanish-American War thousands of our boys died of typhoid fever. Between that time and the World War the bacteriologists had discovered a serum for the prevention of that disease. Although we raised armies of four million men, between 1917 and 1919, the cases of typhoid fever were negligible. The person who wants to enlist in the health army for the fight against disease will find the laboratory sciences, which study the causes and seek to discover the antitoxins and other means of preventing plagues and epidemics, a most interesting field for service.

Health officer. What the physician undertakes to do for the individual in preventing and curing disease, the health officer attempts to do for a community. He looks after the purity of the water supply, testing it often to see that no harmful bacteria have a chance to come into the home through the kitchen faucet. He sees that sewage and garbage are disposed of in such a way as not to breed disease germs. He enforces regulations about the isolation of contagious diseases. He enlists the services of the best physicians and scientists when an epidemic starts, and tries to stamp it out as quickly as possible. He publishes bulletins on health and sanitation. He coöperates with school authorities in keeping the schools free from contagion and infection.

It is because of the efficient work of health officers, supported

by doctors and nurses, that our cities are now the most healthful places in which to live. The health officer usually is a trained physician, but he must also have executive ability. Moreover, he must be perfectly fearless and impartial in the discharge of his duties. His motto is: "An ounce of prevention is worth a pound of cure."

The veterinary. Animals have diseases similar to those which afflict human beings. Doctors who make a specialty of animal diseases and their treatment, are called veterinaries. The veterinary works to prevent sickness among animals by seeing that they receive proper food, that they are kept in sanitary barns, pens, or other living quarters, and by isolating those which become infected. When an epidemic such as the hoof and mouth disease breaks out among cattle, it may mean millions of dollars of loss as well as untold suffering to the dumb animals. Quarantines have to be established and drastic measures have to be taken to stamp out the contagion.

In cities there are animal hospitals where operations are performed, and where sick animals, particularly house pets, are taken care of. Everything in these animal hospitals is kept as neat and sanitary as in a hospital for human beings. There are also veterinary bacteriologists, who experiment to discover the facts about animal diseases and their prevention or cure. Practically every large stock ranch has its veterinary to inspect the stock and help to keep all stock animals in a healthy condition. Since many animal diseases are communicable to men, the work of the veterinary becomes an important branch of the healing art. The opportunities in the field are rapidly increasing for those who have proper training and the personal qualifications which adapt them to the work.

The pharmacist. The pharmacist, or druggist, is the man who handles medicines or healing drugs, and puts them together in the combinations called for by the doctor's prescription. He occupies a position of great responsibility in the health and healing vocations. A mistake in filling a prescription may mean serious injury or even death. The pharmacist,

therefore, not only needs to know various drugs and healing herbs, but he must be trained to absolute accuracy in measuring and combining them in the desired quantities. A person who has any difficulty in following directions, to the minutest detail, should not attempt to become a druggist. The pharmacist's equipment, such as scales and measuring devices, must be constantly tested for accuracy and kept in the best of condition. The druggist needs to be a person of strong will and sound character. He handles narcotics, stimulants, and other dangerous and habit-forming drugs, and he must be able to resist the temptation to make high profits by selling these to drug addicts.

The druggist usually is a business man as well as a pharmacist. His store handles toilet articles, patent medicines, and various lines of merchandise, and usually has a soft-drink fountain or ice-cream parlor. Hence the druggist needs to know the principles of salesmanship and business administration. It frequently happens that only those in charge of the filling of prescriptions are trained pharmacists, while the proprietor and most of the clerks are salesmen, handling the distribution of the general stock.

Oculists and optometrists. One of the most attractive specialties in the field of medicine is that of the *oculist.* He makes a careful study of the structure, functions, defects, and diseases of the human eye. He usually has plenty of patients, since most people are careless and do things that strain or injure the eyes. The oculist, however, devotes himself to finding out what is the matter with his patients' eyes and writing prescriptions, either of medicine or of glasses, that will remedy the defects which he has discovered. It is the optometrist who grinds the lenses and fits the glasses according to the oculist's prescription.

The optometrist is not allowed to perform surgical operations or to prescribe medicines for the treatment of eye diseases, but he may measure eyesight and fit glasses by mechanical means. He must have mastered the fundamentals of optical science,

and must have a high degree of mechanical skill in the grinding of lenses, detection of defects in the glass with which he works, and the mounting of the perfected lenses. Proper adjustment of the frames which hold the lenses is very important; therefore the optometrist must be very careful and painstaking as well as dexterous in the use of delicate tools.

Optometrists usually set up their offices in a jeweler's store, hence the optometrist must be a business man as well as a skilled technician in his art. This is a comparatively new profession. Those engaged in it make a distinct contribution to health and efficiency, provided they keep within the limits of their training and do not pretend to be oculists when they have not had the surgical and medical training demanded by law of the eye specialist.

The psychologist and psychiatrist. The vocations of the psychologist and the psychiatrist are related to the medical or healing arts, because they make a specialty of the relation of mental and nervous states to human ailments. The school psychologist deals with the abilities of children to learn, and devotes himself to improving methods of teaching and learning. *Medical psychology* deals primarily with mental diseases, or abnormal mental conditions, as well as with the hygiene of the mind. *Psychiatry* concerns itself primarily with the subconscious mind and seeks to discover by psycho-analysis the causes for certain fears and attitudes which people have. The purpose is to promote normal thinking and acting and to develop healthy thinking as a condition for healthy being and acting. Psychologists and psychiatrists are employed in all large hospitals, particularly hospitals and sanitariums where mental disorders are treated. The field is a growing one, and is becoming an important line of specialization for medical students.

The occupational therapist. It often happens that a person who has overcome a direct attack of illness has great difficulty in regaining his customary strength. A new branch of the healing vocations has developed out of this situation. The occupational therapist is a person trained to interest the con-

valescing patient in some form of hand work. This light work performs two services — it provides a mild sort of exercise, and helps to keep the patient's mind occupied so that he will not worry about his bodily ailments. This diversion helps him to recover more rapidly, and also results in his having learned a new way in which to employ his leisure time when he returns to his regular vocation.

The nurse. Nearly every branch of the healing art has its specially trained nurses. The doctor diagnoses and prescribes for bodily ills; the nurse takes care of the patient and sees that the doctor's directions and suggestions for treatment are carried out. Many physicians will not take responsibility for a case, particularly if the patient's condition is serious, unless a trained nurse is called. The nurse makes the patient comfortable, watches symptoms, enforces quiet, sees that proper food is provided, takes temperature, and acts in emergencies while the doctor is being summoned. Some nurses devote themselves entirely to home nursing, others have regular hospital positions as head nurses or ward nurses.

There are also *office nurses* for doctors, dentists, surgeons, and specialists of all kinds. *Community nurses* are paid by the city, and are on call for emergencies in homes where a trained nurse could not be paid. The community or visiting nurse also teaches hygiene and sanitation in her home visits, as well as baby hygiene and the proper diet for old and young. *School nurses* look after children in the public schools, enforce sanitary regulations, watch for symptoms of contagious diseases, and teach the children how to care for their teeth and other wholesome lessons in cleanliness and care of the health.

The nurse must be prepared to work hard; in cases where only one nurse is on duty, she must be able to work for many hours at a stretch. To receive the highest pay and be assured of steady employment a nurse must be trained under exacting conditions, and in a recognized school. There are, however, many thousand practical nurses who serve in homes in minor illnesses, take care of people who are recovering from sickness,

and in general perform the duties of house-mother and nurse. Nursing is not only a great humanitarian service but a rapidly developing trained profession, which has many attractions for those who are interested in the care of the sick and willing to make the necessary preparation.

2. *Training, income, and opportunities*

Physicians, surgeons, and various types of specialists. Medical education to-day is more exacting than any other type of professional training. At least two years of college, and preferably an A.B. degree, with major work in biology, physics, and chemistry, and four years of medical school, plus a year of hospital service as interne, are required. Standards have been set so high that the number of medical graduates has been considerably reduced. This means that competent graduates of standard medical schools have very favorable opportunities for success in their profession. There is a great need for young men who are willing to settle in rural communities, and also for those who will undertake general family practice. The overcrowding in the medical profession to-day is in the field of specialization. The specialist needs a city in order to have a sufficient clientèle. Many needy fields, which would yield a good income to a family physician, are now vacant.

Income. Medical education, in addition to being very long, is exacting and expensive. The young graduate must face several years of small income before he is established. The income of the physician depends upon the type of service and the skill he has in diagnosis, treatment, or surgical operation. It also depends upon the class of patients who come to him, and their economic status. Fees for visits, office consultation, operations, blood tests, bio-chemical analyses, and so on, are more or less standardized. Some doctors have very large incomes, and others make a bare living. The larger the income the larger the expenses for upkeep of offices, nurses, laboratory, and other equipment, hence few physicians become wealthy from their practice alone. Medicine is primarily a social-

service vocation, and the net income of the middle fifty per cent of physicians will range between $3000 and $10,000 per year.

There are approximately 150,000 physicians and surgeons, of whom 10,000 are women. This means that there are 750 people for each physician. Competition is keen, responsibility is heavy, hours are irregular, constant study is required to keep up with new discoveries and improved methods, and physical demands are exacting, hence only those who understand all that the life of the physician calls for, in the way of mental and physical equipment, should think of entering the profession.

THE NURSES' TRAINING SCHOOL OF A LARGE CITY HOSPITAL CONNECTED WITH A MEDICAL SCHOOL

The dentist. Training for dentistry is not so exacting as for the physician and surgeon, although the standards are constantly being raised. Some dental colleges will accept high-school graduates, others require two years of college work. The course requires three or four years, the first part of the course being almost identical with that of the medical school. As the

relation of the teeth to general health is becoming better known the training of dentists is coming to be more nearly that of the surgeon, particularly if the dentist aspires to become a specialist in his line. Manual skill is an absolute necessity for the dentist, since he must be able to make crowns, bridges, inlays, artificial teeth, and handle the metals necessary in his work. This, in addition to the manipulative skill required in working with delicate instruments in the filling of teeth, calls for high-grade coördination of mind and body.

There are 75,000 dentists, approximately 2000 of whom are women. While the work of the dentist is not hard, it must frequently be done under nervous strain. The income of the established dentist will vary with experience, skill, and type of community. The expense of fitting out an office is considerable, and it takes from three to five years to establish a paying practice, hence the young dentist needs both business ability and persistence, in addition to his dental training and skill.

Bacteriologists, serologists, medical psychologists, and psychiatrists. The scientific vocations affiliated with the practice of medicine are rapidly increasing, due to the necessity for accurate diagnosis of biological, chemical, and mental symptoms. A few psychologists and psychiatrists maintain offices for private consultation, and have been successful both professionally and financially. There are so many quacks and charlatans, however, preying upon the public in these fields that many excellent scientists find it more satisfactory to work under the auspices of the large hospitals, medical colleges, and universities. The income compares favorably with that of other scientific workers. The training involves graduation from college, and university specialization in the fields of biochemistry, psychology, mental hygiene, and at least the equivalent of the pre-medical curriculum.

The health officer. In every town of considerable size there are health officers, but many of these are practicing physicians who give their services or receive small fees. In the larger cities the health department is a very important department,

and the chief receives a salary on a par with other administrative officials. The school and community nurses usually work under his direction, and he needs to have administrative ability and courage because the enforcement of health regulations often brings him into conflict with powerful interests. The ideal health officer combines a medical and sanitary engineering training.

The veterinary. There are some 15,000 veterinary surgeons, only one of whom in 1920 was a woman. The training usually includes graduation from an agricultural college, with specialization in animal husbandry, and a two- or three-year course in veterinary science. These courses are usually given at an agricultural college, although several of the medical colleges have departments of veterinary surgery and medicine. Veterinaries in the federal service receive from $1500 to $4000. Veterinary bacteriologists receive from $1800 to $5000 per year. This work involves great patience, aptitude for difficult and dangerous research work, and sometimes considerable executive ability when it is necessary to direct the field work of combating a live-stock epidemic. The veterinary in private practice, in a region where there is an abundance of live stock, usually earns an income comparable with that of the general practitioner in medicine.

The pharmacist. Training for pharmacy includes at least graduation from high school, and a course for three or four years in a school of pharmacy. Botany, chemistry, bacteriology, analysis of foods and medicines, and materia medica, as well as pharmacy, or the compounding of medicines, must be studied. Since the pharmacist also must be a salesman, the training usually includes clerking in a drug store during vacations, or after school hours. The young pharmacist on graduation begins his career as drug or prescription clerk in an established drug store, at from $25 to $40 per week. In some States he must have two years of general clerking experience before being registered as a full-fledged pharmacist. As a prescription clerk the salary will seldom amount to more than $300 per month,

hence most young pharmacists wish to have a drug store of their own.

There are some 90,000 druggists and pharmacists in this country, of whom 4000 are women. Many of these pharmacists are engaged in the research end of manufacturing chemists' establishments. There is an increasing demand for men well trained in pharmaceutical chemistry. The beginning salaries in this line are approximately $2000 per year. Heads of departments receive from $4500 to $7500 per year.

The optometrist. The training of the optometrist varies. Some state boards require a four-year high-school course and graduation from a recognized school of optometry. In other States a person is permitted to take the examination, if he has had two years of high school and has had four years' training under a registered optometrist. Some require both graduation from a school and practice before permitting a candidate to take the state board examinations. The training includes anatomy, physiology of the eye, and practical and theoretic optometry.

The graduate optometrist usually begins his career as an apprentice or helper to an established optometrist, at a salary from $35 to $50 per week. Later, if he is capable of saving his earnings, or securing financial backing, he starts an office of his own. His earning capacity will depend upon the quality of his service, plus his business ability. There are 15,000 optometrists and opticians serving the American people, and only about 1000 of these are women.

The nurse and occupational therapist. Training for nurses is usually provided in every large hospital. High-school graduates are preferred, and there is usually a probationary period when the candidate's strength, patience, cheerfulness, and general fitness for the vocation of nursing are tested. The training course usually requires three years, and includes home economics, hygiene, and physiology, in addition to the nursing practice and attendance upon surgical clinics.

Universities which have medical schools and hospitals are

establishing colleges for the training of nurses. There are now twenty-two of these. About two years of college work is given, in addition to the professional training, so that those who graduate have the equivalent of an A.B. degree and are prepared to take places as head nurses, and teachers in training schools. Nursing is thus becoming a profession on a par with teaching. Hours of service are being regulated, pay is being stabilized, and working conditions are being improved. Trained nurses receive from $5 to $8 per day. There are 250,000 registered nurses in the United States, of whom 220,000 are private-duty nurses, 11,000 are public-health nurses, and 5000 are teaching nurses. In addition to these, there are some 150,000 practical or untrained nurses.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Ask your family physician how long it took him to get his training; how long it was after he got his training before he was earning a comfortable living; also what he considers the greatest advantages and disadvantages of his vocation.
2. Interview an eye, ear, and nose specialist, to find out how long it took him to become a specialist after he got his medical training.
3. The next time you go to the dentist's, see if you can get him to tell you about his training, and how much his dental education cost him; also find out about his hours of work, and some of the difficulties he has to contend with.
4. If your town has a health officer, see if you can find out what his duties are, how much pay he receives, and whether he has any trouble getting people to observe quarantines, keep alleys sanitary, or obey other health-office regulations.
5. Is there a cat, or dog, or pet hospital in your neighborhood? Visit it, if there is, and see what the veterinary in charge does. What effect has the automobile had on the veterinary's vocation?
6. Perhaps the druggist will let you see the prescription counter, and show you how medicines are put together according to the doctor's directions. It may be that he will tell you how long he had to work as a drug clerk before he came to own a drug store.
7. Where does the trained nurse stay when she is off duty? How

does she hear of cases where a nurse is needed? What sort of hand work can a convalescent patient do under the instruction of the occupational therapist?

8. Watch the optician, and see whether you think you could be as painstaking and accurate as he is in his work in grinding lenses and setting them in frames for his customers.
9. Read the biographies of the following people who have succeeded in the health and healing vocations: Dr. William Osler, Dr. S. Weir Mitchell, Dr. William C. Gorgas, Dr. William Mayo, Florence Nightingale.

SELECTED REFERENCES

1. Bernays, E. L.: *An Outline of Careers,* 217–29 (medicine).
2. Filene, Catherine: *Careers for Women,* 163–208 (health service).
3. Hatcher, O. Latham, editor: *Occupations for Women,* 249–57 (dentistry); 258–71 (medicine); 272–89 (nursing); 290–97 (pharmacy); 298–315 (public health).
4. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations,* 245–60 (dentistry); 469–90 (medicine); 523–45 (nursing); 561–78 (pharmacy); 579–94 (public health).
5. Platt and Farnham: *The Book of Opportunities,* 315–19 (medicine); 320–22 (drugless healing); 322–24 (dentistry); 324–25 (pharmacy); 325–27 (nursing).
6. Rosengarten, Wm.: *Choosing Your Life-Work,* 199–203 (medicine); 228–32 (optometry); 233–37 (pharmacy); 308–12 (veterinary).
7. Vallery-Radot: *The Life of Pasteur.*
8. Stanford University Bulletin: *Vocational Information,* 147–48 (serologist and bacteriologist); 149–51 (health officer); 151–53 (nurse); 153–56 (physician).
9. Weaver, D. W. and E. W.: *Medicine as a Profession.*

CHAPTER XXIII

EDUCATIONAL VOCATIONS

1. *Nature of the work*

Teaching as a vocation. Ex-President Coolidge believes that teaching is a worth-while vocation. He says: "It is not too much to say that the need of civilization is the need of teachers. The contribution which they make to human welfare is beyond estimation. In our own country this service was never better performed than at the present day." Our standing army of soldiers and sailors is only 225,000, but our standing army of teachers is nearly 1,000,000. It is because we have such a large standing army of teachers that we do not need a larger standing army of soldiers and sailors.

People who govern themselves through elected representatives, as we do in this country, feel that money invested in good teachers is the best sort of insurance, so we spend nearly $2,500,000,000 every year in the maintenance of schools. The teacher not only has the interesting task of helping young people to acquire facts and information, but he also has the responsibility of guiding them in the formation of desirable character-forming habits. There is no greater field for social and patriotic service than in that of teaching. A few of the kinds of teaching positions open are described.

The rural-school teacher. About one fifth of the teaching positions in this country are in one-room rural schools. The rural-school teacher usually has to teach all the school subjects, and has children in her school from the first to the eighth grades. The rural-school teacher works under many disadvantages. Sometimes the equipment is very poor, the buildings mere shacks, and the pay small, but American teachers pride themselves on overcoming difficulties. Normal schools maintain special departments for training rural teachers. Progressive rural communities are building con-

solidated schools, comfortable houses for the teachers to live in, and trying to give country girls and boys the benefit of good teaching. Nearly 4,000,000 American children receive their education in one-room rural schools, so it is a worthy ambition to become a first-class teacher of a rural school.

The kindergarten and the elementary-school teacher. *Kindergarten teachers* have little children from three to five years old in their rooms. To the casual observer it seems that playing games and singing are the only activities; but the person who understands what it is all about can see how the children learn by doing the kinds of things they see others do. Some cities have free kindergartens connected with the public schools, and in others the kindergartens are private schools where tuition fees are paid. In either type of school the work is pleasant for those who love to work with little children.

Elementary-school teachers in the village, town, and city schools have charge of but one or two grades. In the larger cities, where there are promotions in the middle of the year, teachers have only half a grade, such as high or low third, to look after. In the lower grades teachers need to be prepared to handle all the subjects that are taught. In the upper grades, particularly in the seventh and eighth, usually there is what is called departmentalized teaching; that is, one person teaches only arithmetic, another English, another social studies, and so on. This organization makes it possible for a person to become expert in one line of teaching, with the result that both the pupil and the teacher are the gainers. The elementary-school teacher deals with children of from five and one half to fifteen or sixteen years of age. He must know how to interest children in their school tasks, how to perform the daily round of classroom duties skillfully, how to be tactful in trying situations, and how to adjust the subject matter to the needs of individual children.

The junior-high-school teacher. In recent years a new type of school has come into existence. It takes the seventh and eighth grades of the old elementary school and the ninth grade

— first year of high school — and brings them together. This school undertakes to help boys and girls to find out what they want to do in the world; that is, to try themselves out in many different kinds of activities. The subjects taught are a combination of the elementary-school subjects and the early high-school subjects, but organized in a different way and taught from a different point of view.

The junior-high-school teacher needs to know how to teach one or more of the subjects common to such a school, and also needs to be able to help manage school activities, such as social clubs, civic clubs, language clubs, art clubs, school papers, athletics, and other features of junior-high-school life. Junior-high-school pupils are from twelve to sixteen years of age, and junior-high-school teachers should be sure that they are interested in boys and girls of those ages before entering this particular field.

Four-year and senior high-school teachers. In nearly all of the large cities there are both four-year and three-year high schools, in addition to a number of junior high schools. The three-year high schools include grades ten, eleven, and twelve; and the four-year high schools include grades nine, ten, eleven, and twelve. In smaller towns and rural communities the four-year high school is the more common.

The high-school teacher deals with young people from thirteen to nineteen years of age. This period is what we call adolescence. The person who is going to teach in a high school needs to understand and like young people. He must also know thoroughly some one or more of the subjects usually taught in secondary schools, such as algebra, Latin, French, Spanish, English, history, science, commercial subjects, shop, or music. Which of these subjects a high-school teacher is called upon to teach will depend on his interest in the subject, and the amount of special preparation which he has had.

Sometimes, in small high schools, teachers are asked to teach several subjects. This plan has some advantages. It helps a teacher to learn much more about these subjects than he ever

learned about them in college. In general, however, it is better to know one or two subjects thoroughly than to know a little about a great many subjects. For that reason those who want to concentrate their attention upon one subject usually take graduate work in a university and try to secure a position in one of the larger high schools, where each teacher handles only one subject, or at the most, two subjects.

In addition to teaching, high-school teachers have to take charge of roll-rooms, study halls, or library study periods, and they are also asked to supervise some student activity. Some coach athletics, while others sponsor debating, dramatic, language, literary, or other student clubs. While assisting in such activities consumes much of a teacher's time, the experience is valuable because it is one of the best means of keeping in touch with the pupils. The pupils find that the teachers are human, and the teachers discover that the pupils have abilities different from those displayed in the classroom. To those who like young people and who have the necessary preparation, high-school teaching is a very attractive vocation.

The college and university teacher. Above the high school is the junior college, where the work of the first two years of college is done. *Junior colleges* are usually connected with high schools, but sometimes they are small colleges which have given up the work of the last two years and are concentrating on the first two college years. The subjects to be taught are similar to those found in the high schools, but of a more advanced nature. Many of the activities of the students are similar to high-school activities. The students are from seventeen to twenty-one years of age, and they are perhaps a bit more serious than high-school students because more of them know what they expect to do in the world and are interested in taking the work that will fit them for their life-work. Junior-college teachers usually require at least a Master's degree, and an increasing number of them have a Doctor of Philosophy degree.

The regular college is a four-year institution leading to the

degree of Bachelor of Arts. Here the students are from sixteen to twenty-three years of age. The subjects taught vary, but usually are what we call liberal arts subjects. The teachers are all expected to be specialists in their own line, and most of them, in the standard colleges, have a Doctor's degree in the line of their special subject. Teaching positions in colleges are desirable because of secure tenure, and freedom to devote one's energies to a single field of study.

Teachers' colleges are institutions where elementary- and secondary-school teachers are trained. They specialize in training people in methods of teaching the various subjects, and in the content of the subjects which they are to teach. To become a teacher in one of these colleges it is not only necessary to be a skilled teacher, but also to have a knack of teaching other people how to teach. There are skilled mechanics who do their own work excellently, but who would not be able to teach an apprentice how to do the same work. There are many splendid teachers who can teach their own subject, but who could not teach some one else how to teach that subject. That is why we have to have teachers' colleges, and secure teachers for them who can train apprentice teachers. Since most of those who attend normal schools and teachers' colleges are planning to teach, they are very much in earnest and make the task of teaching them a great pleasure.

The American university is an institution which has a four-year College of Liberal Arts, giving the Bachelor of Arts degree, and a number of professional colleges, such as those of Law, Medicine, Education, Engineering, and Commerce. Teachers in the College of Liberal Arts, as stated above, are supposed to be specialists in teaching certain subjects. University professors, in the professional schools, are specialists in the line of their various professions, and are supposed also to be capable of conducting original research. The Law School, for example, has specialists in every phase of law and legal practice, and they train their students in case-study, briefing, court procedure, and methods of legal analysis.

In the Schools of Chemistry, Biology, Agriculture, and Engineering are research specialists who do very little teaching, but devote most of their time to original research. They are the pioneers, or explorers, who find new facts, evolve new principles, and add to the sum of human knowledge. The university professor who is a research man, and knows how to write, often becomes a great authority in his field, thus adding to his influence and prestige, and sometimes to his income.

The librarian. Every school of any importance has a library, and needs a trained librarian to look after the books. If books were just placed upon shelves in the library without being classified, catalogued, and arranged for ready reference, they would lose more than half of their value. It is the librarian who increases tenfold the use to which books may be put by making them easily available for reading. This country is noted for its great libraries. Every large city has a central library, and many branch libraries. The head librarian in these large libraries has a position corresponding to that of the principal of a large school, and has under him many specialized workers. There are *desk clerks*, who hand out the books; *cataloguers*, who receive and classify the books; reference librarians, periodical librarians, those who purchase books, those who keep books in good repair, and many others.

Librarians have to be book tasters. They read the new books and post bulletins about them, or write brief reviews that will cause others to wish to read them also. In city libraries they conduct story hours for small children. In school and college libraries they teach students how to find and how to use books of reference. They issue and keep in repair the free textbooks, and keep a record of books that are loaned. The librarian must of course be a person who loves books and likes to work with them. She is a real educator, who helps to make possible the successful work of the high school or college teacher, and who in the city library promotes an interest in and love of good reading.

2. *Administrative positions in education*

The elementary-school principal. Schools which have several teachers need some one to look after all sorts of business details, to attend to discipline, to see that the course of study is followed, to help the teachers in their work, to make reports to the city or county superintendent, and to look after the welfare of the teachers and children. This person is called the principal. Some elementary-school principals have two- or three-room buildings to look after, while others have thirty- or forty-room buildings and are responsible for that many teachers and fifteen hundred to two thousand children.

The elementary-school principal needs to know the elementary-school subjects thoroughly. He must know how to manage both children and teachers so that everything will go along smoothly in his school. He also is required to meet parents and other patrons of the school, and secure their support for the policies which he is trying to carry out. The elementary-school principalship is the line of promotion from the elementary-school teaching positions.

The high-school principal. The high-school principal has the same relation to a high school that the elementary-school principal has to his school. He must know how to select good teachers for the high-school subjects. He sees that attendance records are kept, that equipment and teaching materials are provided, that the building is kept in order, and that teachers do their work, and make their reports on time.

High-school pupils are not so easy to manage as are elementary-school pupils. The high-school principal needs to understand how to deal with adolescent boys and girls, and how to keep them loyal to the school, interested in their work, and ambitious to become useful men and women. This means that the high-school principal must be a real leader. He usually takes an interest in student activities, and coöperates with the students in organizing debating, athletic, scientific, and other clubs. It is also a part of his job to see that the public knows what the school is doing, so that proper support

for its work may be secured. There are opportunities for real social service in the high-school principalship.

The superintendent of schools. In the larger towns and cities the head of the school system is called the superintendent of schools. He needs to have all the training and ability of an elementary- or high-school principal, and to be in addition a kind of social engineer. He has to meet the public and satisfy the taxpayers that they are getting their money's worth in the kind of education offered in his schools. He has charge of both elementary and high schools. He is the executive officer of the school board, the leader and adviser of all the teachers, and the one who supervises all teaching, either personally or by deputies. The position of superintendent of schools calls for strong, well-trained, mature, and capable men and women. It offers genuine opportunities for service in helping to raise the intellectual level and mold the character of the children in the community.

Deans of boys and girls. A new type of educational vocation is that of dean of boys, or dean of girls, in the larger high schools. These officers are especially qualified to handle the problems peculiar to high-school boys and girls. They act as advisers, and take an especial interest in everything that concerns the boys or girls under their supervision. Corresponding positions are open in colleges and universities, where the titles are dean of men, or dean of women. These officers make it their business to be "best friend" to every boy or girl in their school. The positions require gifts of tact, sympathy, and understanding of the whims, interests, and ambitions of all sorts of young people. Successful work in a deanship is excellent training for promotion to a principalship.

Deans of professional schools. Each professional school in a university has its dean or executive head. These officers are usually professors who teach a few hours a week and in addition manage the business and educational affairs of the school. They make out the annual budget, recommend new professors, the promotion of present members of the staff, and the change

of old policies or the adoption of new to the president of the university. Deans are usually chosen because of their scholarship and executive ability. The deanship of a professional school in a university often leads to a college or university presidency.

College and university president. The highest educational position is that of college or university president. Colleges and universities have boards of regents, or trustees, who select an executive to carry out their policies. This officer is known as President, Provost, or Chancellor. Sometimes he has to combine the tasks of educator, business manager, and financial agent. In the larger institutions he is primarily an educator. It is because the leaders in business, law, education, religion, and nearly all other fields of activity are trained in the colleges and universities, that the presidents of these institutions are counted among the most honored and useful citizens of the country. The president of an educational institution must not only be a scholar of recognized standing, but he must have real ability as a public speaker, social vision, insight into human nature, and strong qualities of leadership. He has a commanding position in State and community, and has a rare opportunity to impress his personality upon ambitious youth.

3. *Training, income, and opportunities*

Kindergarten and elementary-school teachers. There are some five thousand kindergarten teachers in the public schools, and their salaries range from $1100 to $2000 per year. They receive their training in normal schools or special kindergarten training schools. Teachers in one-room rural schools receive average salaries of $735 per year, and there are 170,000 such teachers. Not very many of these poorly paid teachers have had normal school training. Most of them qualify for teaching, after completing the elementary school or a year or more of high school, by taking county examinations.

Teachers in consolidated rural schools receive an average salary of $1000, while teachers in towns and villages with less

than 2500 inhabitants receive average annual salaries of $1150. In cities of 100,000 or over, the average salary of the elementary-school teacher is $2000. Only about one half of the 800,000 public-school teachers receive salaries of $1200 or over. This means that teaching is not a highly-paid vocation, but when we find out that the average salary of the public-school teacher forty years ago was less than $200 per year, it appears that teachers' salaries are increasing.

In spite of the fact that many other vocations pay better salaries, there are 250,000 students now in normal schools and teachers' colleges preparing for the teaching profession. The teacher has a six-hour day,[1] a five-day week, and from two to three months' vacation each year. The increase of salaries for teachers makes it possible to attract better trained candidates. The provision of teachers' houses in rural districts, and pensions after thirty to thirty-five years of service in many States, are factors which are helping to make teaching a more attractive life-work than it used to be when Ichabod Crane taught in Sleepy Hollow.

High-school and junior-college teachers. There are about 160,000 junior and senior high-school and junior-college teachers, 65,000 of whom are men and 95,000 are women. Salaries of high-school teachers range from $800 to $1500, for rural high-school teachers; from $1000 to $2000, in towns of from 2500 to 5000 people; from $1200 to $2500, in cities from 5000 to 100,000; and from $1800 to $3200, in cities of over 100,000 people. Junior-college teachers' salaries average from $1800 to $3600, depending upon the size and location of the junior college.

In some States graduates of normal schools may teach in high schools, but in most States graduation from a standard four-year college is now required. In California a year of graduate work beyond high school is necessary. Courses in methods of teaching, high-school administration, and other professional courses, as well as four or five months of practice in teaching, are now required for a high-school credential in

[1] The teacher often has considerable home work to do.

many States. Junior-college teachers, in public junior colleges, must have a Master of Arts degree or its equivalent, in addition to high-school credentials. Many of them now have a Doctor of Philosophy degree.

College and university teachers. There are about 60,000 college and university professors in this country, two thirds of whom are men. Salaries of instructors run from $1500 to $2500; of assistant professors, from $1800 to $3600; of associate professors, from $2500 to $5000; and of full professors, from $3600 to $10,000. Instructors in the colleges are usually selected from among the most promising graduate students. As they prove their scholarship and teaching ability, and also their skill in writing up their research problems, they gradually receive promotion to the higher positions in their own universities or are called to higher positions in other institutions.

A Doctor of Philosophy degree is now almost an absolute necessity before one can hope for advancement in a college position. The actual hours of teaching or lecturing vary from six or seven to twelve or fifteen a week, but the professor is expected to give considerable time to directing the research work of graduate students, as well as to writing in his own special field of learning. Long years of training are necessary. The salaries are not high compared with the income of other professional and business vocations of the same rank, but the college professor has many rewards and satisfactions of a social and intellectual nature. At any rate there is a great deal of competition for positions, which means that those who think of entering the field of college and university teaching must expect to find the trail to the top both narrow and steep. Relief stations, in the form of promotions and pay increases, are likely to be long distances apart.

Administrative positions in education. Elementary-school principals receive average salaries of from $1350 in rural communities to $3500 in cities of 100,000 or over. High-school principals receive salaries from $1500 in rural communities to an average of $5000 in cities of 100,000 or over. Superintend-

ents of schools receive from $2000 in the smaller cities to $10,000 and $12,000 in the larger cities. State superintendents of public instruction receive from $3000 to $12,000, with $5000 as about the average. These positions are open only to teachers who have had experience and have shown qualities of leadership.

While the pay in administrative positions is better than in teaching positions, the work is more difficult. The administrator has to please everybody and must take the blame when things go wrong. County and state superintendents are generally elected to their offices by the people, and have to be involved in politics. City superintendents and principals are appointed by school boards, but are subjected to many annoyances by people who want to "run the schools" to suit their own notions. As in the case of college professors, however, there are always a great many applicants for every position, because ambitious teachers are willing to accept the disadvantages that go with administrative positions in order to have the opportunities which such positions give for leadership and service.

Normal school, teachers' college, college, and university presidencies. The presidencies in normal schools, teachers' colleges, and universities now number about 1000, and the salaries range from $3000 to $25,000. Normal school and teachers' college presidents receive between $3600 and $7500. Small colleges pay from $3000 to $6000. The well-endowed private colleges pay from $8000 to $12,000, and the larger state and private universities pay from $10,000 to $25,000.

The college president is more secure in his position than the public-school principal or superintendent. He is selected by a board of trustees, and his position is usually permanent if he succeeds in his duties. His pay is much smaller than a man of his ability could earn in another vocation, but the position of influence which he attains, and the contribution which he makes to social progress, help to offset the smaller financial return. There are kinds of satisfaction and happiness which

money cannot buy. Persons who expect to engage in educational vocations must be willing to take part of their pay in that sort of currency, otherwise they will not be happy in their work.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. Try to remember all the teachers you have had. Which ones did you like best? What made you think that you liked some teachers and disliked others?
2. Make a list of the things you liked most about the best teachers you have had. Also a list of the things you did not like about the poorest teachers you have had. Now do you think that you possess more of the good-teacher qualities than of the poor-teacher qualities?
3. Try to find an opportunity to watch a kindergarten teacher, an elementary-school teacher, and a high-school teacher at work. Write out a brief description of what you observe in each case.
4. What is the difference between the work of a high-school principal in a small town, where there are fifty pupils, and in a city high school with 2500 pupils? What difference is there in pay? Which one knows his pupils best?
5. To whom would you make application for a position as a teacher in a rural school? In a city school? Write out an application for each of the positions just named.
6. What are the requirements regarding health on the part of those who apply for teaching positions in cities? Does the same hold true for rural, one-room schools?
7. Find out how many teachers there are in the schools of your own town, and of the nearest city, and what training, experience, and other qualifications they must have to secure their positions.
8. Look up in the encyclopedia, or in separate biographies, the life stories of Nathan Hale, Ezekiel Cheever, Horace Mann, James A. Garfield, William T. Harris, David Starr Jordan, Charles W. Eliot, Mary Lyon, Frances Willard, Kate Douglas Wiggin.
9. If any of your near relatives or ancestors were teachers, find out all you can about them, write a report and bring it to class, giving incidents to illustrate the difference between teaching now and teaching then.
10. See how many different kinds of teaching positions you can find out about, which have not been touched upon in this chapter.

SELECTED REFERENCES

1. Bernays, E. L.: *An Outline of Careers*, 381–94.
2. Cubberley, E. P.: *An Introduction to the Study of Education*, 127–48 (the training of the teacher).
3. Filene, Catherine: *Careers for Women*, 119–51 (teaching); 293–310 (library work).
4. Friedel, J. H.: *Training for Librarianship.*
5. Hatcher, O. Latham, editor: *Occupations for Women*, 214–48 (teaching); 345–63 (library work); 388–412 (student personnel work).
6. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 273–96 (education); 297–305 (educational administration); 306–28 (teaching); 451–68 (library work).
7. Palmer, George H.: *The Ideal Teacher.*
8. Patri, Angelo: *A Schoolmaster of the Great City.*
9. Platt and Farnham: *The Book of Opportunities*, 298–302 (teaching); 365–69 (library work); 369–70 (personnel work).
10. Rosengarten, Wm.: *Choosing Your Life-Work*, 270–75 (teaching).
11. Wright, Henry P.: *The Young Man and Teaching.*
12. Stanford University Bulletin: *Vocational Information*, 74–75 (educational research); 76–78 (psychological examiner); 79–80 (superintendent of schools); 81–91 (teaching); 92–94 (vocational counselor); 145–47 (librarian).

CHAPTER XXIV

SOCIAL-WELFARE VOCATIONS

1. *Nature of the work*

Social service. Social service is a term which may be applied to several different vocations. We call them social-service or social-welfare vocations because people engage in them for the purpose of bettering the conditions of human society. This they undertake to do by raising the standards of individual conduct, and by improving the social environment of people. One of the chief requirements demanded of persons engaged in this group of occupations is that they have not only the desire but the capacity to assist other people in making adjustments to new and trying situations. These vocations might well be called human or social-engineering callings, because their chief function is that of preventing the waste of precious human values.

Wherever a person is living on a lower physical or moral plane than he should, he is not only wasting his own moral bank account, but he is influencing others to do the same. The social engineer who helps him to find his true place in society, where he can render the fullest service, is helping both the individual and the social order. It is because there is so much work of this kind to be done, and because there are so many people who are willing to contribute money in order that it may be done by experts, that the field of social and religious service is both wide and varied. A few of the best-known social-service vocations are briefly described in this chapter.

The clergyman (*ministers, rabbis, priests*). The clergyman is the expert in the religious aspect of social service. It has been said that man is incurably religious. One of the first special vocations was that of priest, that is, the one who made a business of finding out all that could be learned regarding his

tribe's religion, and how to communicate with and propitiate the tribal deity. The world has a number of great religious faiths, such as Christianity, Buddhism, and Mohammedanism, but the office of the minister or priest is similar in all of them. He takes the lead in religious worship; performs the religious rites and ceremonies; preaches to the people regarding the doctrines and disciplines of his church; visits his people in their homes; comforts them in sorrow; helps them in trouble and distress; admonishes them for their sins and shortcomings; and in every way tries to help them to lead a better life.

The person who thinks of entering the ministry must realize that he will be expected to live the most upright sort of life, because he will be advocating constantly that type of life for others. With an enthusiastic desire to devote his life to the service of others, he must combine a devout temperament and the willingness to make genuine sacrifices for the sake of his calling.

Religious service offers many opportunities for persons of business and executive ability, as well as those who have special gifts as preachers and pastoral workers. There are many varieties of religious faith, and some of these have millions of adherents. These adherents must be organized, leaders must be trained, papers must be published to keep them informed of what is going on in their denomination, and colleges and seminaries must be kept up. These activities call for all sorts of talent and ability, hence many of those who start out as priests or ministers find that they can serve their church better in the capacity of teacher, editor, college professor, president of a college or seminary, or as a field organizer, educational secretary, or district superintendent.

The missionary. There are some religions which are known as missionary religions. They send adherents into lands where their faith is unknown and undertake to secure new converts. Christianity and Mohammedanism have been especially strong missionary religions, and both have sent their missionaries into every part of the known world. The missionary is a kind of

religious explorer. He needs to have many of the qualities of the explorer, such as zeal, physical courage, a spirit of adventure, ability to surmount great difficulties, and willingness to endure hardship and even death in the pursuit of his calling.

Missionaries have been the world's great civilizers. They have not only taught their religious beliefs to the peoples to whom they have gone, but they have taught them the vocations of civilization — agriculture, handicrafts, home building. They have established schools, colleges, and hospitals. They have taught sanitation and the science of government. It is because of its pioneering aspect that the mission field has been so attractive to the bold spirits among the youth of the Church, from the days of the Apostle Paul to the present day.

The Salvation Army. A great religious leader, General William Booth, conceived the idea of organizing religious workers, among the poor people of the great cities, as an army. Companies of the Salvation Army may now be found in almost every land under the sun. It has its generals, colonels, majors, captains, and other officers. Every unit has its band, or fife and drum corps. They hold street meetings, and maintain mission halls. They collect, repair, and sell wearing apparel at small cost. They maintain homes for the destitute. They minister to every human need. Strict discipline and high standards of service are demanded of all who enlist, and especially of the officers.

Y.M.C.A. and Y.W.C.A., K. of C., and Y.M.H.A. The young people of various religious faiths have banded themselves together in highly organized societies for the extension of religious and spiritual ideals, and the promotion of mental and physical standards among their fellows. The Y.M.C.A. and the Y.W.C.A. have built great buildings in all of the larger and many of the smaller cities in this country. These buildings have become social, religious, and educational centers. Bible study, physical education, and adult education are carried on. The New York City Y.M.C.A. alone has seven branches, and 10,000 or 12,000 students in its day and evening classes. A

number of colleges giving degrees also are carried on under the auspices of the "Y."

Similar activities are sponsored by the Knights of Columbus for the youth of the Roman Catholic Church, and for the Jewish Church by the Young Men's Hebrew Association. These organizations offer a wide range of activities for young men and women, who are interested in attaining positions of religious leadership, yet who do not feel called to become ministers, priests, or rabbis.

Social-settlement work. Activities somewhat similar in character to the types of service described in the preceding paragraph are found in what we call social settlements in the large cities. The chief differences are that social settlements are non-religious in character, and are generally located in the foreign and poorer sections of our larger cities. The settlement originated in the desire of college and university graduates to take up their residence in the poorer sections of cities in order that they might become a part of the community life. They felt that they would thus be able to study conditions and aid in social betterment. Kindergartens, boys' and girls' clubs, lecture rooms, gymnasiums, and libraries are maintained. Hull House and Chicago Commons are among the social settlements which have become best known in this country. Residence in a social settlement is one of the best possible means of securing training and experience for social-service vocations.

Industrial-welfare workers. Growing out of the social settlement movement, the movement for industrial welfare has now become a field offering many interesting opportunities. People who were interested in providing better working conditions for those engaged in industry were at first volunteers. Often their efforts were opposed, both by the employers and the workers. At present, however, the great manufacturing and business administrators recognize the economic value of welfare work, and maintain their own staffs of experts. Provision is now made for social diversion, physical recreation, and mental improvement. Anything which promotes contentment

among workers, or which helps them to find their best niche in the organization, is accepted as being a good investment. Hence there are an ever-increasing number of good positions such as welfare directors, educational directors, personnel officers, and psychologists for industrial organizations.

Welfare workers with boys' and girls' organizations. Boys and girls of to-day are fortunate in having many different organizations interested in their welfare. In addition to the home, the church, and the school, there are numerous societies interested in promoting the physical, moral, and social interests of the growing generation. Probably the most extensive and thoroughly organized of these agencies are the Boy Scout and Girl Scout movements. These have been founded on the appeal which scout service in war-time has upon the imagination of youth. Neither is, however, a military organization. Rather each is a society for the revival of participation in out-of-door pastimes. Woodcraft, nature study, and every form of body-building and character-making enterprise are carried out. They have a fascinating ritual, and just enough of the mysterious to appeal to boys and girls in the early years of adolescence.

Playground service. Another form of work with boys and girls deals with the playground. There was a time when vacant lots and busy streets were the only playgrounds for city children. With the growth of the cities and the increase of automobile traffic, it became necessary to provide safe places for the boys and girls to play. At the present time there are numerous municipal playgrounds in our cities, fitted up with apparatus, and having baseball, football, and track fields in addition. Some playgrounds also have reading rooms, branch libraries, and large rooms where clubs can meet and programmes and dramatic performances can be given. Skilled playground workers must be provided to teach children new games, oversee their play, and keep order on the grounds.

The United States Government maintains a Child Welfare Bureau which coöperates with all other agencies interested in

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boys and girls. It carries on investigations into conditions of child labor. It encourages the States to enact better laws for the protection of their growing children. It works with the Scouts, the Camp Fire Girls, the Pioneers, the Friendly Indians, and the Hi Y[1] by gathering and publishing information about the best methods of conducting camps and other activities. This bureau is a kind of clearing house for every child-welfare organization in the country. It might be called the official guardian of all the future citizens of America — their real Uncle Sam.

Workers with deficient, dependent, and delinquent children. In colonial days, if a child's parents died in poverty and there were no relatives to take him in, he was "farmed" out to some family which expected to profit by his labor. Life for such children was very hard and bitter. Now we have public institutions or private societies which take care of all such cases, providing clothing, shelter, and education for the child until he is able to take care of himself.

Formerly if a child committed any offense against the law he

[1] High School Y.M.C.A. groups.

was tried in the regular criminal court, and if found guilty was sent to jail with other criminals and outcasts. Now we have children's courts, where the judge is usually a kindly man or woman, interested in children. This judge acts as a sort of legal guardian of a delinquent boy or girl, and tries to find out how to handle the case so as to make of the child a good citizen. He is called the judge of the juvenile court. His assistants in the court are called probation officers. Children who are put on probation, that is, given another chance, are required to report to the probation officers every week, and the parents, or guardians, are required to see that the orders of the court are carried out. Every large city has its juvenile court with a number of probation officers, and in some States every county has a juvenile court and county probation workers.

Then there are the various types of schools for defective children, the blind, the feeble-minded, and those with other defects, for whom the State provides care and education. These, with the state schools for the delinquent, call for a large number of trained workers. The work is difficult, and in many respects disagreeable, but it constitutes genuine social service and appeals to those who like to work at the salvage phase of the human-welfare problem.

Charity organization workers. People who travel in Oriental countries always speak of the swarms of beggars who, with disagreeable persistence, follow strangers. In some countries there are great organizations of beggars who are licensed to get all they can from sympathetic and generous people. In this country, also, there are many professional beggars who make a good living, some of them becoming rich, through their skill in making people believe that they are in great need or distress. Charity organizations have grown up in response to the necessity for investigating reported cases of want and distress. The private individual has not the time to look into such cases, and would not know how to go about it even if he had the time.

The Associated Charities. The Associated Charities is an

organization in a city or town that collects money from generous persons and maintains a group of expert workers, who investigate cases of poverty and give aid to persons really in need. Also these organizations seek to help the poor to help themselves, by finding employment and working for changed conditions that will reduce poverty and promote thrift. Nearly every State has its state board of charities, which acts as a clearing house for all such organizations, and undertakes to secure necessary legal provisions for the protection of workers and their dependents, such as widows' pensions, workmen's compensation laws, and the rehabilitation of persons injured in industry.

The Red Cross. The greatest of all charitable organizations is the Red Cross, which gathers funds to relieve distress in war, famine, and disasters, such as the Johnstown flood, the Japanese earthquake, or the Mississippi flood of 1927. Hundreds of millions of dollars have been distributed by the Red Cross, which is a great international organization with several thousand trained employees. The organization maintains supply depots in various parts of the world from which it is able to dispatch immediate relief to a stricken area. It also has rendered distinguished service in the fight against tuberculosis and other disease plagues.

2. *Training, opportunities, and income*

The religious vocations. Until recently the ministry has been considered essentially a man's vocation. Even at the present time out of 130,000 clergymen in this country, there are only 2000 women. The training differs with different denominations. For the majority of ministers the standard training consists of an A.B. degree from a liberal arts college, and two or three years of professional training at a theological seminary. A few theological seminaries will receive graduates of high schools, and some Bible Institutes will accept mature persons if they have had an eighth-grade education. Clergymen, as a rule, are poorly paid, but considerable progress has been

made in the past few years to improve that feature of religious service.

Some denominations, like the Roman Catholic Church, pay no stated salaries to their priests or clergymen, but all their needs are taken care of and they have an establishment in keeping with the size and importance of the church over which they preside. Other denominations pay stated salaries. Frequently parsonages are provided free, and it is, therefore, difficult to estimate the income of ministers. It is probable that twenty-five per cent of American clergymen receive salaries under $1000 per year, fifty per cent receive from $1000 to $3000, and twenty-five per cent above $3000. Salaries of $10,000 per year are not uncommon in the largest city churches.

The chief attraction of this calling is the opportunity for unselfish service. No one should enter the calling who is not prepared to face the fact that material rewards are considerably below those which may be expected in other professional fields.

One of the most serious disadvantages of the ministry is that young men are most in demand, especially in the Protestant churches. As one grows older, it becomes more and more difficult to secure a desirable parish. Pensions and annuities are, however, being provided by many denominations to take care of those ministers who have grown old in the service. When this practice becomes general it will be a partial offset to the present low scale of salaries.

Y.M.C.A. and Y.W.C.A., K. of C., Y.M.H.A., and other religious workers. There are some 50,000 people engaged in these vocations, and about two thirds of these are women. The training required usually is that of graduation from college and first-hand experience in some branch of the organization, either as secretary, director, field worker, or volunteer helper. Executives in charge of central buildings receive salaries from $5000 to $12,000 per year. Department executives receive from $2400 to $4000. In the smaller centers, salaries are from $1200 to $3500, from lowest to highest, with the greatest number receiving salaries between $2000 and $3000.

The best preliminary, or try-out training, for entering these vocations is active participation as a volunteer in the work which they do. If a person finds that he enjoys that type of service and is successful in it, he can go to a training school maintained by the organization and prepare himself for one of the minor positions. Beginning salaries are usually lower than those given above, but there is a fairly definite line of promotion, with opportunities for growth and development, and retiring pensions for those who remain in the service.

Social-settlement and industrial-welfare workers. The minimum training for social-settlement and industrial-welfare workers is college graduation, with special emphasis on sociology, economics, psychology, and education. Settlement workers are not numerous, and there are not many salaried positions. The work usually is voluntary, the residents even paying their own board for the privilege of rendering the service and securing the training. The Chicago School of Civics and Philanthropy is the type of school where definite training can be secured. This school makes use of the Hull House and Chicago Commons as centers where social problems may be studied at first hand.

There is great variation in the salaries paid to industrial-welfare workers, but where the work is well established and has won the confidence of the management of an industry, the director receives a salary on a par with a minor executive, and the other workers fare better than the clerical workers in the organization.

Boy and Girl Scouts, playground service. In the Scouts and playground vocations, college education is again almost a necessity. Majors in physical education, and minors in psychology, education, and social studies should be part of the college course. Playground service is sometimes under the control of the school board, and workers must in that case have special certificates. Often the playgrounds are under the jurisdiction of the park commission, or a special playground commission. When either of these commissions are in control, civil-service examinations must be passed.

Salaries range from $1500 to $3000, with the middle fifty per cent receiving from $2000 to $2500. City playground supervisors, if under the school board, rank as assistant superintendents, with salaries from $3000 to $5000; if under the park or playground commission, salaries are approximately the same, but conditions of employment and tenure are not so satisfactory. There are fewer paid workers in the Boy and Girl Scout service, because much of the scout-master work is done voluntarily by those engaged in other vocations, but regional directors, state and national officers are salaried individuals, whose incomes compare favorably with those of high-school teachers and principals.

Charity workers, probation officers, Red Cross. There are no standardized requirements in the way of preparation for persons engaged in caring for dependent and defective children and adults. A college education, with emphasis on the social sciences, psychology, tests and measurements, and education is desirable. However, there are many people engaged in such vocations who have had very little formal education beyond the high school. In these fields also there are almost as many volunteer workers as there are paid workers. There are some 3500 probation officers, who receive from $1200 to $2400. Chief probation officers in large cities receive from $2500 to $4500, witn the average around $3600. There are about 15,000 directors of charitable organizations and institutions for the care of delinquent and defective children. Salaries range from $2000 to $6000, and frequently include "found" or maintenance. Many such positions are political in nature, that is, they depend upon some political party for appointment and tenure. This discourages young people from making specific preparation, because they have no idea how long the employment will last. Where tenure is protected by civil-service laws, and appointments and promotions are made on merit, one can afford to prepare to render expert service.

The Red Cross employs several thousand paid workers, in addition to the many thousands of volunteer helpers upon

whom it can call in emergencies. Very few young people start out with the ambition to become Red Cross workers. The majority of those now engaged in that service have been attracted to it from other professional and social-service vocations. The salaries, while not large, compare favorably with those to be had in other lines of social-service work. One of the most attractive aspects of the Red Cross service is that one may be sent to distant parts of the earth to take charge of famine, or other types of relief, and consequently has the opportunity to handle important and difficult problems.

3. *Special qualifications and characteristics*

The person who thinks of entering any of the social-service and welfare vocations described in this chapter, should think it over carefully and advise with others in regard to his fitness to engage in such service. The social worker deals primarily with people, and hence should have the gift of meeting other persons easily and on terms of sympathy and understanding. A strong sense of humor is essential, as it helps one to keep one's balance in trying situations and to be genial and approachable. The social worker also needs to have qualities of leadership, not of the dominating type, but of the pervasive type, which enables one to secure coöperation from many people of different interests and social levels, and without becoming too conspicuous. The grandstand player seldom gets very far in social-service work.

The rewards of religious and social-service work compare favorably with those from teaching and allied vocations, but, as stated above, one who desires to become wealthy will look for other worlds to conquer. Satisfactions, not of a monetary character, come to teachers and social-service workers. They contribute to the improving of working conditions in factories. They bring about reforms in prisons. They help stricken regions to recover from disaster. They brighten the lives of neglected children. They bring the peace and satisfaction of religious faith to spiritually hungry multitudes. They come

in contact with both the bright and the seamy side of life, and have the consciousness of helping to make the world a little better than they found it. These vocations offer an outlet for the greatest capacity of intellect, personal strength of character, social sympathy, and physical energy that any one could possibly possess. Some of the world's greatest figures have served in these fields, and by their life-work have profoundly affected the welfare and destinies of mankind.

SEEK-FURTHER QUESTIONS AND SUGGESTIONS

1. If you are a member of some church, ask the minister to tell you what his duties are for a week. If Sunday is his hardest day, when does he rest? How does he manage to prepare two sermons a week and attend to all his other duties? How does he manage to keep in touch with all the members of his church? Does he have to act as superintendent of the Sunday-School? Would he choose the ministry again, if he were starting all over?
2. Do you know a returned missionary? What country did he work in? How did he learn the language? Was preaching the only activity? How was he treated by the people whom he tried to convert to Christianity? If he had another chance, would he go back to the foreign field?
3. Find out where the Salvation Army headquarters is located. Go and talk with the officer in charge. Inquire about the different types of service the Army renders. Ask some man who served with the American Expeditionary Forces in France what he thought of the work done for the soldier boys by the Salvation Army.
4. Visit the local Y.M.C.A. or Y.W.C.A. or the K. of C. building, and give a description of the activities that are carried on. Do they have education classes, vocation classes, and so forth? Do they have a gymnasium, and a boys' department with a special director? Talk with some of the secretaries and find out how they came to take up that type of work, and how a person would go about preparing to enter such a vocation. Ask also about the disadvantages and the difficulties.
5. Have you ever belonged to a Girl Scout Troop, to the Girl Reserves, or Camp Fire Girls? To the Boy Scouts, the Hi Y, the Friendly Indians, or other boys' organization? What does the scout master or leader do? Does he receive pay for his work?

What qualities do boys and girls like to have the club leader possess?

6. Is there a Juvenile Court in your town or county? Attend a session of this court, if you can arrange to do so. See how the Judge handles the cases. Find out what the probation officer does. Ask him whether the children who are given another chance make good. Have him tell you about the methods employed, and about some of the cases which he has to look after.
7. Look up the biographies of the following: Saint Paul, Saint Francis, Saint Chrysostom, Father Junipera Serra, Phillips Brooks, Henry Ward Beecher, David Livingstone, Marcus Whitman, John R. Mott, General Sir Baden-Powell, Clara Barton, Jane Addams, Judge Mary M. Barthelme, Rabbi Stephen Wise.
8. Look up the work of the Chicago Juvenile Court, or some other similar institution.

SELECTED REFERENCES

1. Addams, Jane: *Twenty Years at Hull House.*
2. Berkowitz, H.: *Problems of the Jewish Ministry.*
3. Bernays, E. L.: *An Outline of Careers*, 259–62 (the ministry); 355–67 (social service).
4. Filene, Catherine: *Careers for Women*, 399–409 (religious work); 461–559 (social work).
5. Hatcher, O. Latham, editor: *Occupations for Women*, 413–32 (religious work); 465–96 (social work).
6. Hirth, Emma P., editor: *Training for the Professions and Allied Occupations*, 597–619 (religious work); 667–87 (social work).
7. Mott, John R.: *The Claims and Opportunities of the Christian Ministry.*
8. Platt and Farnham: *The Book of Opportunities*, 285–97 (religious work); 352–65 (social work).
9. Rosengarten, Wm.: *Choosing Your Life-Work*, 217–21 (the ministry).
10. Stanford University Bulletin: *Vocational Information*, 157–58 (the ministry); 191–95 (social service).
11. Williams, Charles D.: *A Prophetic Ministry for To-day.*

CHAPTER XXV

PREPARING FOR, FINDING, AND KEEPING A POSITION

1. *Getting ready to do something*

Preparation for making a living. When a vocation has been selected the next step is, of course, to begin to make preparation for it. For some of the vocations described in the preceding chapters it would be possible to make preparation in a few weeks, while other vocations would require months or even years.

Routine tasks in the factories can be learned very quickly, but in order to enter the research laboratories of a given factory it would require high-school and college education, with additional graduate work in physics, or chemistry, or other fields.

The business and clerical vocations require at least high-school education, with special courses in the commercial subjects. Those who desire to be advanced to executive and administrative positions in the business world should attend a college where there is a School of Commerce, or a Graduate School of Business. Others will enter directly into some business house and work their way up to the better positions. There is a difference of opinion among leading business men as to which route is the better — the higher education and school of business route, or the practical learn-on-the-job method of starting at the bottom, upon graduation from high school, and growing up with the business. If the college man is willing to start near the bottom after he has received his diploma, and wait for promotions to come after he has learned the business thoroughly from the inside, it is generally admitted that he will probably go higher than his high-school classmate who went immediately into the business house on finishing his high-school course.

Training for the metal working, woodworking, building, and

other skilled trades may be secured either on an apprenticeship basis, or in a public or private trade school. Apprenticeship training requires from three to five years, and if previous training has been had in a trade school one or two years of apprenticeship may be deducted. In some cities the public schools and the skilled crafts enter into definite arrangements to have the preliminary training taken care of in the Smith-Hughes or vocational classes. The final training is then secured as an apprentice on the job. This arrangement makes it possible for the young learner of the trade to keep on with his general education, at the same time that he is cutting down his period of service as an apprentice.

Those who work in the fields of agriculture, transportation, and communications may secure their training, either on the job as apprentices, in Smith-Hughes classes in high schools and trade schools, or in the private schools maintained by some of the great telephone and telegraph or transportation companies. The Bell Telephone Company, for example, selects every year a number of young men from the colleges and secondary schools, and gives them vacation employment. Later on, the more promising of these workers are taken into full employment and given a special type of training for supervisory and administrative positions. The Southern Pacific, and other great railways, maintain shop classes for young workers, where they are given not only shop training, but supplementary general education courses as well.

Changes in the character of training required. It used to be true that the young man who wanted to become a lawyer would do as ex-President Coolidge did. As soon as he graduated from college he secured a position in the office of a practicing attorney, and read law until he was ready to pass the examinations for admission to the Bar. Now it is necessary to have high-school graduation and at least two years of college work before one can enter a law school, and some law schools have become graduate schools of law, requiring an A.B. degree for admission.

Prospective young doctors, also, used to apprentice themselves to a practicing physician. Now it requires graduation from college and three to five years of work in medical schools and hospitals to earn the degree of Doctor of Medicine. George Washington learned to be a surveyor by the apprenticeship method, but to-day he would have gone to college, and at the beginning of his junior year he would have started his "engineering major," taking his A.B. degree in engineering. Then, if he wanted a professional degree, he would have had to attend the university two years longer. The person who wants to be a minister now must graduate from a liberal arts college, and then attend a theological seminary for three years. Training of equal length is required for college professors and other professional workers.

The preliminary training for the artistic vocations, such as music, painting, sculpture, drawing, and architecture, may be secured in the high-school courses in those fields. Also a certain amount of amateur practice is possible during the high-school course. Complete preparation, however, involves attending, for the artist, such schools as the National Academy of Design in New York, or the Art Institute in Chicago. There are also many other excellent art schools in the large cities of the country. In music there are several conservatories of high quality connected with liberal arts colleges, as well as others of national renown, such as the New England Conservatory of Music, in Boston. Training for commercial artists and designers may be had on the apprenticeship basis, or in special schools, in almost any of the larger cities.

Securing the needed training. The ambitious young person who desires to fit himself for a particular vocation, will find no lack of opportunity to secure the required training. The important thing is to be reasonably sure that the vocation for which one is seeking training is the one in which there is the greatest probability of success, and the best opportunity for service. The next most important point is to decide whether one will seek his training by the apprenticeship route, or by the

special-school route. This will have to be decided partly on the ground of financial resources, and partly on the available opportunities for training. Where there is a good Smith-Hughes course in the high school, or a well-established trade school, it is usually better to stay in school just as long as possible: first, because it means that you will have a better background of general education; second, because you will be just that much more mature, and will not have to remain in the apprenticeship class or group so long.

For those who expect to enter the professions the question will be, "How much liberal education should I have before starting on my professional training?" This question will be answered partly again on the basis of financial resources, and partly on the ground of available institutions. Some professional schools will not admit persons unless they already have an A.B. degree. Others will permit one to start on the professional course at the beginning of the junior year in college. Some junior colleges have two-year courses in business, engineering, nursing, and agriculture, which train for what might be called semi-professional levels in those vocations. The vocational opportunities are more numerous at these levels also than at the highest levels.

The professional man should have as broad an education upon which to build his vocational training as it is possible for him to get. The quality and strength of the foundation has a great deal to do with the height of the building which can be erected upon that foundation. It is much the same with a life-career. Although there are many notable examples of men who have risen to the highest positions in business, industry, and the professions who had very little schooling beyond the elementary grades, the truth is that they succeeded in spite of their handicap. In this age of research and science, and of industrial organization and efficiency, it would be foolish to neglect to secure just as much training and preparation for one's vocation as it is possible to obtain.

2. *Securing a position*

Careful planning required. Securing an opportunity to work requires careful thought and planning. This is particularly true in the case of one's first position. If one should believe all the advertisements of agencies which offer to give training for various types of positions it would appear that the world is eager to employ every young person who has received the training which these agencies offer. The fact is that it not only is necessary to work hard for the training required in a vocation, but it also is necessary to work hard if one is to find the right sort of an opportunity to make a start in that vocation. There often is a long period of waiting, and much seeking of interviews before a position is secured.

There are various ways in which one hears of openings. In cities the daily papers carry many columns of "want ads," some of them describing positions for which applicants are desired, and others telling of people who want positions. Sometimes the school where you receive your training has a placement bureau which keeps in touch with employers, and if you have made a good showing during the training course this placement office will recommend you when an opening for which you are prepared appears. Then there are public and private employment agencies which make a business of finding positions for persons seeking employment. A service fee is charged, and sometimes a percentage of the first month's, or first year's wages. In dealing with such agencies one should be sure that they are reliable. Friends also often are able to suggest the right place to make application. Such an introduction is most desirable because it means a kind of endorsement or backing that gives the employer a favorable impression at the very beginning. Or, finally, one just hunts and hunts until a job is found.

Personal application. It does not make so much difference how one hears of a position, but it makes a great deal of difference what one does in making application for it. If, as is most often the case, one must apply personally to secure the position,

there are several important points to remember. One should be sure that he is dressed as well as possible, that his clothes are neat and clean, and that he is prepared to state his case briefly and clearly to the prospective employer.

It sometimes happens that a person is required to take certain preliminary tests, or to fill out blank forms. This should be done carefully and with the mind alert, as such tests frequently are scored and the results sent in to the employing officer, to be used by him in his interview with you. Careless mistakes or poorly-worded answers may cause you to lose the opportunity which you seek. It is necessary to be frank and honest in such an interview. You might secure a position by misrepresenting your own qualifications and experience, but when put to the test on the job you would be very likely to fail, and then it would be worse for you than failing to secure the position at all. Employers usually insist on a recommendation from your last employer, or in knowing who the person is, in order to communicate with him before employing you. The best of all recommendations is not what we say about ourselves, but what the persons for whom we have worked say about us when we give them as references.

Written application. A person is sometimes able to secure a position entirely by correspondence. We hear of an opening at a distance where it would be very difficult to make personal application. We write a letter of application and send references, or ask our friends to write. A letter is one of the means by which we reveal our personality, breeding, and education to the person receiving it. Therefore, we should be especially careful when writing a letter of application for a position. Misspelled words, poor grammar, careless punctuation, and poorly constructed sentences are indications of defective training. Poor writing, either by hand or on the typewriter, gives a very bad first impression of the writer, and may be the cause of his rejection. Letters of application should be brief, to the point, and businesslike, but should at the same time tell the things about the applicant which the employer would wish to

know. A favorable impression, made by a well-worded letter of application, may result in an invitation for a personal interview. If the applicant in his bearing and conversation is able to live up to the expectation created by his letter he probably will secure the position.

Advertising. The person seeking a position has something to sell, that is, his services, and it often is advisable to advertise the fact in a daily or weekly paper, in the "situations wanted" column. Such advertisements should be carefully worded: first, because they cost a certain amount per word, and unnecessary words add to the cost without increasing the value; second, ability to say just the right thing in a few words is in itself a recommendation of the writer. After publishing a want ad it is always important to keep in touch with the paper in order to be prompt in taking care of any replies that may come in. In hunting for a position the old adage, "It is the early bird which gets the worm," holds true, provided the early bird, in the person of the job hunter, is not only early but also able to convince the prospective employer that he has the preparation and qualifications demanded by the available job.

3. *Holding the job when secured*

Ability here the real test. There are some persons who are good job getters but poor job holders. They make a good appearance, put up a good selling talk for themselves, make a good impression, and secure the position. When it comes, however, to the everyday grind of doing the work demanded of them they fail to make good. It may be that they try to hold the position by doing barely the minimum of work. It may be that they are careless, do not follow directions carefully, or do not do their work promptly. It sometimes happens that when a person secures his training in a school shop he masters the technical details of the work, but does not learn to do it in a really workmanlike manner. When he is checked up by the foreman he may foolishly resent being told how to do the task in the correct and efficient way, and thus lay the

foundation for irritation and trouble that may result in loss of the position. The beginner in any vocation should therefore bear in mind a few simple principles which may help him not only to hold his position, but to grow and develop in it.

Study the requirements of the position. A "willing-to-be-told" attitude beats a "know-it-all" attitude every time. Too many young workers think they know more than the boss, and thus shut themselves off from needed and helpful instruction. Or, it may be that a false pride prevents one from asking how a certain task should be performed. Employers, foremen, and bosses are usually more than willing to help a new employee. They prefer to have him ask questions rather than to go ahead uninstructed, and spoil stock or injure valuable machinery. The best attitude is that of willingness to learn, coupled with a careful study of the requirements of the position. Much help can be obtained from other employees, both by watching how they do their work, and by asking questions. Most of them remember when they were beginners, and are both sympathetic and helpful if given a chance.

Give good measure in time and effort. A worker who has to be watched, to see that he gives full measure of service, never gets very far. He may succeed in holding positions when workers are scarce, but he is one of the first to be dismissed when the slack season comes. Workers are entitled to their regular hours, and to "overtime," or extra pay, when they work beyond those hours. The important thing is to give full-measure of service during the regular hours, and not to become known as a "clock-watcher," who thinks more of quitting time than of doing good work.

During the World War a person who tried to get out of war service was called "a slacker." That term originated in industry, and is applied to the person who shirks his responsibilities — who seeks every opportunity to shift the work assigned to him upon some other person, or to leave it undone and still draw his pay. The best antidote for slacking is found in the cultivation of a keen interest in the work to be

done. This attitude not only helps to make the time pass more quickly, so that the days do not seem so long, but it helps the worker to do more accurate and skillful work and brings the respect of the better workers in the group and in the long run leads to recognition and promotion.

Look ahead. The person who is interested in his work will also be likely to look ahead. He is not satisfied to live, as the saying is, "from hand to mouth." He wants to make progress. He not only learns how to do skillfully the task to which he is first assigned, but he soon discovers the next position in the scale of promotion. While doing well his present work he studies the requirements of the next place, higher up, and begins to try out for it. It is necessary, however, to be willing to wait with good grace for recognition. Other employees, who have been with the firm or in the shop longer, may have prior claims to the first opening. Good sportsmanship is just as important in business and industry as in athletics. Show yourself to be a good sportsman by waiting your turn for advancement. You will be all the better prepared, and when you do go up it will be easier to maintain the new position and make good in it, because you not only will have the good will of your employer but of your fellow workers as well.

Keep fit. The track or football man has to keep in condition in order to be at his best. He does not do all his training, and then let up on the strenuous round of practice weeks before the contest. He must keep fit and in condition right up to the day of the meet or the game. The worker in any field must keep himself in good bodily condition. Former President Roosevelt employed a famous athletic trainer to keep him in good physical condition for his work as chief executive of the Nation. Grand-opera singers and movie actors also submit to severe physical training to keep themselves in proper voice and form for their work. Anything, therefore, which makes us less efficient, mentally or physically, to perform our daily tasks should be avoided. Proper diet, exercise, and wholesome recreation are the best available means for enabling us to do

TRACK ATHLETES READY TO GO!

our work with satisfaction, both to ourselves and to our employers every day.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. The following conversation tock place between two prominent business men: Number 1: "Do you employ many college graduates in your business?" Number 2: "No, they are too impatient for promotion. After six months they think they know the whole business, and want a general managership at least."
2. Discuss the problem involved in the above statement of the attitude of this business man, who hires hundreds of employees.
3. Why is it that high-school preparation and "reading law" in some lawyer's office is no longer a sufficient preparation for the practice of law?
4. Talk with the Smith-Hughes director in your high school, if there is one, and find out how much time is saved from apprenticeship service by those who graduate from the Smith-Hughes courses.
5. Have the secretary of your class in Vocations write to the National City Bank, New York, or the General Electric Company, Lynn, Massachusetts, and ask for particulars of their training courses. The National City Bank takes college graduates, and

the General Electric Company at its Lynn plant takes eighth-grade and high-school graduates for special training.

6. When Herbert Hoover landed at San Francisco, on his way to Palo Alto to attend Stanford University, he had to borrow money from a friend to pay his fare to the college town. He found a job and worked his way through college, with very little assistance from relatives. Is it possible for a boy to do the same thing now?
7. The class can find interesting exercises in connection with writing "position-wanted" ads, letters of application, and looking through the "help-wanted" columns of the newspapers for the best types of personal advertisements for positions.
8. Another interesting class exercise consists in dramatizing the various types of "applying-for-position" situations. Some one may represent the employment manager of a large firm, interviewing applicants; another member of the class may impersonate the manager's private secretary, who supervises the filling out of necessary blanks; and several students may act as "job hunters," setting forth their qualifications for the available positions.
9. Is a worker justified in engaging in week-end pastimes which cause him to come back to work on Monday tired out?
10. Is an employee likely to be disliked by his fellows if he pays strict attention to business during working hours, and thereby wins promotion?

SELECTED REFERENCES

1. Bate, W. G., and Wilson, Eliza A.: *Studies in Vocational Information*, 23–35 (qualities that make for success); 136–48 (finding your place).
2. Barrett, Charles R.: *Getting a Good Job.*
3. Doughton, Isaac: *Preparing for the World's Work*, 124–37 (learning promotion).
4. Groves, Ernest R.: *Personality and Social Adjustment.*
5. Hall, S. R.: *How to Get a Position and How to Keep It.*
6. Marden, Orison S.: *Choosing a Career.*
7. Rosengarten, Wm.: *Choosing Your Life-Work*, 52–71 (choosing your career).
8. Weaver, E. W.: *Building a Career.*

CHAPTER XXVI

MAKING A LIFE WHILE MAKING A LIVING

1. *More to life than making a living*

Making a living only a part of one's life-work. We call the work by which we make our daily bread our vocation. Not very many people are relieved from thinking about the question of how that is to be done. A very few unfortunate persons are born under circumstances which make it unnecessary for them to worry about making a living. You may wonder why the word unfortunate is used in connection with such persons. You would probably consider them very fortunate. The fact is, however, that the sons and daughters of the rich lose a great deal of the fun and zest of life by having one of the greatest incentives to effort taken away from them. They also find it difficult to develop a sturdy character, since character is formed to best advantage in the overcoming of obstacles and the surmounting of difficulties. If one is completely protected from the bumps of life by financial shock absorbers, he is likely to become soft and effeminate. The great majority of us, then, who have to think about choosing a vocation and preparing for it in order to be able to make a living, are really the fortunate ones. It makes life seem more like a worth-while game, and gives us a feeling of having an important part to play in that game.

There is much more to life, however, than just making a living. Hours of work, in the chief vocations, are gradually becoming fewer. Our grandfathers worked twelve and fourteen hours per day, six days a week. Eight hours is now the standard working day, and in many vocations a seven-hour day and a five-and-a-half-day week are coming into fashion. This means that more and more leisure time is going to be at our disposal. It is what we do with this leisure time that will count most in determining whether we are merely making a

living, or actually making a life worth living. There are a number of important factors in making a life that might be mentioned, but it will be possible to suggest only a few.

Making a home. The starting point for real living is a home. Every normal person plans some day to have a home of his or her own. In order to have a home it is necessary to make preparation beforehand. Some of this preparation comes in our parents' homes. The girls learn to cook and sew and take care of the home by helping their mothers. The boys help about the house and yard and learn to keep things in repair. Preparation for homemaking can be further supplemented by taking the appropriate courses in high school. Home-making, where household decoration, landscaping, and home care are taught by experts, as well as cooking, sewing, and millinery, is becoming a popular subject in many high schools, and in others is required of all girls for one year at least. Courses in landscaping, gardening, simple repair work, house-wiring, first-aid plumbing, and other things useful for the man about the home to know, are given for the boys.

The part played by the home in making a real life possible cannot be overemphasized. It is not the size, or the cost, or the furniture, or anything that one can buy that makes home the best place on earth, but the spirit that abides there. The family circle, with father and mother, brothers and sisters, makes a little community, where love and helpfulness hold sway. It is for this reason that those races which have made the most of the home have reached the highest state of civilization. Churches, schools, clubs, and societies all help to make us what we are, but most of us owe our greatest debt to the home where we were reared. Making a home of our own should be one of our great goals in life. How to prepare ourselves so that our own home shall become a quiet, restful, and inspiring place in which to live and bring up a family, is one of the vital problems which we must face and solve.

Serving the community. Every American citizen owes a certain amount of service to his local community, and to his

State and Nation. This is not just a matter of sentiment; it is a matter of everyday honesty. The honest man always pays his debts. Every one of us has received a great many benefits without cost to ourselves. These benefits have come to us because we live in a free country. Not only are the elementary schools free, but the high schools, and in some States the state universities, state colleges, and teachers' colleges also are free. This is the only country in the world where education beyond the elementary grades is free and open to all those who have the ability and inclination to go farther.

Other countries charge tuition, and require severe selective examinations to be passed by those who want secondary education. This is illustrated by a comparison of France with one American State. France has a population of approximately 40,000,000. The American State, California, has a population of about 4,000,000. France has 130,000 secondary-school students; California has 160,000 regular day high-school pupils, and 110,000 evening, continuation, and part-time high-school students. All of the students in French high schools, except the few holding government scholarships, pay tuition. None of the 240,000 students in the high schools of California pay any tuition. In France there are about 50,000 students in universities, all of whom pay tuitions. In California, with one tenth the population of France, there are about 50,000 college and university students, one half of whom are attending free state institutions.

The opportunity that comes to one on account of having a free and open road to as much education as one is capable of mastering cannot be measured in dollars and cents, but the fact that one lives in such a country makes it a part of honor to pay our debt to the community and the State in some sort of free service. Performing the ordinary duties of citizenship, such as voting at school elections, and elections for state and national officers, does not require a great deal of time. There are, however, other opportunities for service, such as serving on school boards, city planning commissions, city councils, and

non-paid city boards of various kinds. There are also community activities in the promotion of the general welfare where service and leadership are required, such as community chest drives, child-welfare enterprises, and coöperative efforts to bring musical and literary attractions to the city or town where one lives. The churches, and the benevolent and charitable organizations always need volunteer workers to accomplish their worthy purposes. Nearly every one can find some place for voluntary service of a kind that will promote the welfare of the community, and give a kind of satisfaction that cannot be found in any other type of activity. Giving freely of one's time in community service is a most satisfactory way to enrich one's life.

Having a hobby. There are a great many vocations for which preparation can be made rather quickly. A person with sound health and reasonable intelligence can learn to do the things required in such vocations in a few days or weeks. The work in these vocations, however, is likely to be monotonous because it consists in doing the same thing over and over. Only a few muscles are called into play, and the operations soon become automatic, requiring no thought on the part of the worker. Other vocations call mostly for mental work. Lawyers, teachers, writers, and social-service workers do not get a great amount of physical exercise in connection with their daily work. Such vocations are called sedentary, because persons who work at desks perform their labors while sitting down. In almost every kind of vocation, when one has thoroughly learned it and practiced it for a number of years, the operations, duties, and tasks become more or less routine or automatic. This means that we do not employ nearly all of our real abilities in the vocation at which we make a living.

The only way to keep well balanced is to have as many of our physical and mental abilities as possible employed at interesting tasks. The person whose living is made by working with persons and ideas should learn to do something which requires hand work, and which involves physical exercise.

The person whose vocation involves considerable physical exercise and hand work should learn to draw, or paint, or play on a musical instrument, or do something that will give him a chance to keep his mind at work on worth-while thoughts and problems. We call such experiences hobbies, or avocations. A worth-while hobby may require more training than is required by the vocation in which one is engaged.

The man who works in an automobile factory and spends his time putting three or four bolts into their proper holes in the engine block, as it passes him on its runway, is able to learn how to perform that operation in a very short time; but if he has learned to play a violin he has had to practice long hours and study music in order to master the art. The playing of the violin, either alone or as part of an orchestra, gives him a chance to employ a part of his leisure time in a way that gives pleasure and satisfaction. It offsets the monotony of the day's work and provides the best possible kind of recreation.

Cabinet-making or wood-carving would be an excellent avocation for the person who does mostly brain work. Samuel F. B. Morse was a nationally known landscape painter when he became interested in electricity as a hobby. He became so interested in the study of electrical phenomena that it was soon absorbing most of his time. When he finally succeeded in inventing and launching the telegraph as a means of communication, he abandoned painting pictures as a vocation. What had been his hobby became his vocation, and what had been his vocation became his hobby.

Early many-sided interest important. It is so important for one to have a hobby that preparation for it should be begun in the junior high school or the senior high school at least. We enjoy those things most, as avocations, in which we have some special skill. Hence in junior or senior high school we should try ourselves out in such subjects as music, art, literature, manual training, shop, and other special courses. In whichever of these subjects we find that we have a particular interest we should do some extra work, in order to develop good amateur

ability. A few persons in any school will find that they have sufficient ability to think of one or another of these fields as their regular vocations, but for most of us they will serve best as avocations, and we can afford to spend considerable time on one or more of them with that end in view.

There was a time when liberal education was supposed to be only for those who had leisure, that is, for the well-to-do class. If the ordinary person found time for expressing his emotions in artistic form it had to be in connection with his trade or craft. This was possible when the same workman planned and completed the articles on which he worked. He could then indulge in curious and beautiful designs, and take pride in having created something beautiful as well as useful. Now, however, furniture is made in factories where each part is made separately and in great quantities. These parts are then sent to the assembling room or plant and put together. No single workman does more than a small fraction of the completed product. The same is true of shoes, clothes, or automobiles. Since the workman under existing industrial conditions has an increasing amount of leisure he can find time to devote a part of that leisure to the expression of his thoughts in some pleasing or artistic form, and in a field not necessarily related to his vocation. His vocation is often dull and uninteresting, offering no chance for originality or initiative, but if he has wisely chosen his hobby, or avocation, he can find expression for any special interests and talents which he may have. Every one, therefore, should make just as careful preparation for his avocation as for his vocation. By his vocation he earns his living. By his avocation he helps to make living more worth while.

2. *An ideal for which to strive*

Planning for a home of one's own, performing the duties of citizenship and community service, and having a hobby or avocation as a means of keeping one's balance, mentally and physically — are all means of making one's life worth the living. There is another factor which contributes to complete

living that should be mentioned. It is the necessity of having an ideal for which to strive. Such an ideal may take different forms, three or four of which may be briefly touched upon.

Freedom of the mind. Abraham Lincoln dedicated his life to the cause of liberating the bodies of men from human slavery, but it was necessary to liberate the minds of millions of his countrymen from age-old ideas before the institution of slavery could be abolished. There are still in this country millions of people whose minds are bound with shackles of prejudice, superstition, and ignorance. To knock off these shackles and free the minds of men from this bondage is the work of teachers, ministers, editors, social workers, and statesmen. Just being a teacher, editor, minister, social worker, or statesman, however, does not mean that one is really engaged in freeing people's minds from ignorance, prejudice, and intolerance. Many people in these vocations are engaged in teaching intolerant ideas, writing editorials which create rather than eliminate racial and national prejudices, and which likewise encourage certain brands of dense superstition and ignorance.

In order to serve the cause of the freedom of the mind it is necessary for one to have an ideal of broadmindedness, tolerance, and love of truth. Such an ideal or attitude comes only by conscious effort and constant practice. It is one of the most difficult ideals to strive for, because it means that one has frequently to stand alone, to be in the minority, or to support an unpopular cause. That is particularly difficult for a young person, or for that matter for any person, because it sometimes makes one conspicuous to dare to go against the group with which we associate. The easy thing to do is to follow the crowd, do as they do, think as they do, and conform with their ideas. In the long run, however, it is the person who thinks things through for himself, and whose actions are governed by certain principles or ideals, who contributes most to the freedom of the human mind. Independent thinking and devotion to truth are both essential qualities of true leadership.

Economic freedom. One reason for making careful preparation for a vocation is that we may have economic freedom; that is, be independent of others in the matter of provision for food, clothing, shelter, and other necessities of life. To think, however, of our own economic freedom alone is rather selfish. The person who accumulates money just for its own sake is called a miser, and no sane person wants to be known as a miser. While working to insure one's own economic freedom it is both possible and desirable to think, plan, and work for the ideal of economic freedom for all. This does not mean that every one will some day have exactly the same income as everybody else, but it does mean that a real effort should be made to see that every one has a chance to become economically free and self-supporting. There are people so selfish and self-seeking that they try to get everything for themselves and their families, regardless of how they do it or who goes hungry. They employ unfair methods, and secure unfair advantages by force or legislation, in their effort to monopolize goods or commodities of various kinds.

On the other hand, there are business and industrial leaders who control large enterprises and conduct them in the interest of their employees and the general public, satisfied with a reasonable return on their investments. By efficient methods in management and production they greatly increase output, and are able to sell an improved article at a lower cost while paying good wages to their workers. This latter practice is coming to be more and more the ideal of the American business man and manufacturer. This new ideal of economic freedom for all is based on the theory that the better the economic status of the worker the more goods he can buy, both of the kind produced by his own employer, as well as the goods produced by others. One of the first manufacturers to put this idea of the value of economic freedom for all workers into practice was Henry Ford. The idea has spread rapidly, in recent years, and seems to be working out in a splendid way. What is being done by American business men and manufacturers in the field

of practical idealism is mentioned here to show that one can serve his fellow man in any vocation, if he has the will or purpose to do so.

Freedom of the spirit. The person who is really free and truly happy is the person who is not dependent upon *things*. In order to make the best of life it is important to know how to find satisfaction in *thoughts* and *feelings*, which have their origin in the realm of the spirit. Thoughts and feelings of this nature usually come most naturally to those who have faith in and are working for some great cause. The person who is always thinking about his own comfort, his own advantage, and his own small circle of interests is likely to become selfish and petty. It is the person who devotes a part of his thought to truth, and beauty, and goodness, and tries to discover how he can help to make the world a little better than he found it, who finds life most worth living. This fact makes it important that we should all cultivate an interest in some great movement which has as its aim the righting of human wrongs, the improvement of living conditions, or the raising of moral standards.

Whatever we do to make a living, or in whatever community we cast our lot, we shall find religious, charitable, or educational organizations or societies. By identifying ourselves with others who are making sacrifices to promote a worthy cause, we shall most easily cultivate the habit of thinking and working for others. Such service and activity gives us a broader outlook upon life, helps us to avoid the fault of becoming self-centered, and enables us to pay some of the debt which we owe to society for all the advantages which we have enjoyed. Just to make a living is not enough, we should all plan to have the fullest and most serviceable life that it is possible for us to live.

> We live in deeds, not years;
> In thoughts, not breaths;
> In feelings, not in figures on the dial.
> We should count time by heart throbs.
> He most lives who thinks most,
> Feels the noblest, acts the best.
>
> PHILIP JAMES BAILEY, from *Festus*.

SEEK–FURTHER QUESTIONS AND SUGGESTIONS

1. What is meant by the old adage: "It is only three generations from shirt-sleeves to shirt-sleeves"?
2. In the book *Who's Who* we find the biographies of more sons of ministers than of any other occupational group in proportion to numbers. How do you account for this fact?
3. How do you explain the fact that the Hebrews, who have been without a country or a government of their own for over two thousand years, have maintained their racial identity and are more numerous now than they ever were at any time when they had a government of their own in Palestine?
4. Millions of dollars every year are given to American schools and colleges by prosperous business men who formerly attended these schools. Why do they give this money?
5. What is the difference between a diversion and an avocation?
6. What avocations did the following men have? Benjamin Franklin? Thomas Jefferson? Woodrow Wilson? John Muir?
7. Six out of every one hundred people in this country are unable to read and write. Where have they been while the schools were in session?
8. Which takes the most courage, to do something hard that everyone about you is doing, or to do something comparatively easy, which you would have to do alone in the face of ridicule?
9. Suppose all the money in the United States was divided equally among all the people, what would be the situation at the end of ten years?
10. Which is the better ambition, to strive to earn a million dollars to give to the poor, or to build up a great industry that will give employment to thousands of men at good wages?
11. The names of some men who have become world famous follow: Alexander the Great, Cæsar, William the Conqueror, Napoleon Bonaparte. How do the contributions which these military leaders made to world progress compare with the contributions made by such men as Kepler, Newton, Bacon, and Einstein; or Socrates, Plato, Aristotle, Confucius, Buddha, Mohammed, and Jesus?

SELECTED REFERENCES

1. Bate, W. G., and Wilson, Eliza A.: *Studies in Vocational Information*, 79–89 (man and his job).

2. Bennett, Arnold: *How to Live on Twenty-Four Hours a Day.*
3. Briggs, Le Baron: *School, College, and Character.*
4. Cabot, Richard C.: *What Men Live By.*
5. Doughton, Isaac: *Preparing for the World's Work,* 179–91 (our individual responsibility); 207–15 (playing the game).
6. Eliot, Charles W.: *The Durable Satisfactions of Life.*
7. Fenton, Norman: *Self-Direction and Adjustment,* 105–13 (your opportunities and responsibilities).
8. Fisher, Irving, and Fisk, E. L.: *How to Live.*
9. Gulick, L. M.: *The Efficient Life.*
10. James, William: *Talks to Students on Some of Life's Ideals.*
11. Neumann, Henry: *Education for Moral Growth.*

BIBLIOGRAPHY

THE books that are starred in this list are mentioned frequently in the "Selected References" at the ends of the various chapters of this book. The full title and other descriptive items are all included here, but in the text they are referred to by the author's name, the title of the book, and the specific pages to which attention is called in connection with a given vocation.

Adams, Elizabeth Kemper: *Women Professional Workers.* The Macmillan Company, New York, 1922.

Adams, Henry C.: *Description of Industry.* Henry Holt and Company, New York, 1918.

Addams, Jane: *Twenty Years at Hull House.* The Macmillan Company, New York, 1923.

Albright, H. M., and Taylor, F. J.: *O Ranger.* Stanford University Press, 1928.

*Allen, Frederick J.: *A Guide to the Study of Occupations.* Harvard University Press, Cambridge, 1921.

Allen, F. J.: *Advertising as a Vocation.* The Macmillan Company, New York, 1924.

Allen, F. J.: *Business Employments.* Ginn and Company, Boston, 1916.

Allen, F. J.: *Law as a Vocation.* The Vocation Bureau, Boston, 1913.

Allen, F. J.: *The Shoe Industry.* Henry Holt and Company, New York, 1921.

Allen, J. P.: *Practical Building Construction.* D. Van Nostrand Company, New York, 1924.

Arnold, H. H.: *Airmen and Aircraft.* The Ronald Press, New York, 1926.

Baldwin, Simeon E.: *The Young Man and the Law.* The Macmillan Company, New York, 1922.

Bardorf, C. F.: *The Story of Sugar.* Chemical Publishers, Easton, Pennsylvania, 1922.

Barrett, Charles R.: *Getting a Good Job.* American Technical Society, Chicago, 1917.

*Bate, William G., and Wilson, Eliza A.: *Studies in Vocational Information.* Longmans, Green and Company. New York, 1926.

Beckman, R. O.: *Self-appraisal.* Vocational Service Corporation, Chicago, 1922.

Bennett, Arnold: *How to Live on Twenty-Four Hours a Day.* Doubleday Doran and Company, Inc., New York, 1910.

Berkowitz, H.: *Problems of the Jewish Ministry.* New York Board of Jewish Ministers, New York, 1917.

*Bernays, Edward L.: *An Outline of Careers; A Practical Guide to Achievement.* Doubleday Doran and Company, Inc., New York, 1924.

Book, William F.: *Learning How to Study and Work Effectively.* Ginn and Company, Boston, 1926.

Briggs, Le Baron R.: *School, College, and Character.* Houghton Mifflin Company, Boston, 1914.

Bulletins on Floriculture, Horticulture, Forestry, Fisheries, and Market Gardening. United States Department of Agriculture, Washington, D.C.

Burbank, Luther, and Hall, Wilbur: *The Harvest of the Years.* Houghton Mifflin Company, Boston, 1927.

Burleigh, C. B.: *All Among the Loggers.* Lothrop, Lee and Shepard Company, Boston, 1908.

Cabot, Richard C.: *What Men Live By.* Houghton Mifflin Company, Boston, 1914.

Cahalane, C. F.: *The Policeman.* E. P. Dutton Company, New York, 1923.

Caldwell, Otis W., and Slosson, E. E.: *Science and Remaking the World.* Doubleday, Doran and Company, Inc., New York, 1923.

Collins, J. H.: *The Story of Canned Foods.* E. P. Dutton and Company, New York, 1924.

Cook, John A.: *Pursuing the Whale.* Houghton Mifflin Company, Boston, 1926.

Crabtree, J. H.: *The Cotton Industry.* D. Van Nostrand Company, New York, 1923.

Cubberley, E. P.: *An Introduction to the Study of Education.* Houghton Mifflin Company, Boston, 1925.

Dean, Edward O.: *Opportunities Out of Doors.* Harper and Brothers, New York, 1921.

Doughton, Isaac: *Preparing for the World's Work.* Charles Scribner's Sons, New York, 1922.

Edgerton, A. H.: *Vocational Guidance and Counseling.* The Macmillan Company, New York, 1926.

Eliot, Charles W.: *The Durable Satisfactions of Life.* Thomas Y. Crowell Company, New York, 1910.

Fairchild, C. B.: *Training for the Electric Railway Business.* J. B. Lippincott Company, Philadelphia, 1919.

Federal Board of Vocational Education: "The Metal Trades"; in

Vocational Education Series, no. 7. Government Printing Office, Washington, D. C., 1919.

Fenton, Norman: *Self-Direction and Adjustment.* The World Book Company, New York, 1926.

*Filene, Catherine: *Careers for Women.* Houghton Mifflin Company, Boston, 1920.

Fisher, Irving, and Fisk, E. L.: *How to Live.* Funk and Wagnalls Company, New York, 1915.

Fredericks, C.: *Efficient Housekeeping.* American School of Home Economics, 1925.

French, George: *Twentieth Century Advertising.* D. Van Nostrand Company, New York, 1927.

Friedel, J. H.: *Training for Librarianship.* J. B. Lippincott Company, Philadelphia, 1921.

*Fryer, Douglas: *Vocational Self-Guidance.* J. B. Lippincott Company, Philadelphia, 1925.

Gabriel, R. H.: "Toilers of Land and Sea"; in vol. III, *The Pageant of America.* Yale University Press, New Haven, 1925.

Gibson, C. R.: *The Romance of Coal.* Seeley, Service and Company, New York, 1923.

*Gowin, E. B., Wheatley, Wm. A., and Brewer, John M.: *Occupations.* Ginn and Company, Boston, 1923.

Groves, Ernest R.: *Personality and Social Adjustment.* Longmans, Green and Company. New York, 1924.

Gulick, L. M.: *The Efficient Life.* Doubleday, Doran and Company, Inc., New York, 1906.

Hague, C. W.: *Printing Occupations.* The Bruce Publishing Company, Milwaukee, 1922.

Hall, S. R.: *How to Get a Position and How to Keep It.* Funk and Wagnalls Company, New York, 1908.

Hamlin, Talbot F.: "The American Spirit in Architecture"; in *The Pageant of America*, vol. XIII. Yale University Press, New Haven, 1927.

Hammond, John Hays: *The Engineer.* Charles Scribner's Sons, New York, 1921.

Haskin, Frederick J.: *The American Government.* J. B. Lippincott Company, Philadelphia, 1923.

*Hatcher, O. Latham, editor: *Occupations for Women.* Published by the Southern Women's Educational Alliance, 401–2 Grace-American Bldg., Richmond, Va., 1927.

Hausmann, Erich: *Telegraph Engineering.* D. Van Nostrand Company, New York, 1922.

*Hill, Howard C.: *Vocational Civics.* Ginn and Company, Boston, 1928.

*Hirth, Emma P., editor: *Training for the Professions and Allied Occupations.* Published by the Bureau of Vocational Information, New York, 1924.

Hoerle, H. C., and Saltzberg, F. B.: *The Girl and the Job.* Henry Holt and Company, New York, 1919.

Horton, Charles M.: *Opportunities in Engineering.* Harper and Brothers, New York, 1920.

Hyde, W. De Witt, editor: *Vocations.* 10 vols. Hall and Locke Company, Boston, 1911.

Jacoutat, A.: *The Manufacture of Confectionery.* D. Van Nostrand and Company, New York, 1924.

James, William: *Talks to Students on Some of Life's Ideals.* Henry Holt and Company, New York, 1913.

Johnson, Edith: *Women of the Business World.* J. B. Lippincott Company, Philadelphia, 1923.

Ketling, Elizabeth: *Helpful Talks with Girls.* The Christian Herald Publishing Company, Bible House, New York, 1910.

Kitson, H. D.: *How to Use Your Mind.* J. B. Lippincott Company, Philadelphia, 1925.

Kitson, H. D.: *The Psychology of Vocational Adjustment.* J. B. Lippincott Company, Philadelphia, 1925.

*Lane, May Rogers: *Occupational Studies.* International Text Book Company, Scranton, Pennsylvania, 1927.

Leake, Albert H.: *Education for Girls and Women.* The Macmillan Company, New York, 1918.

Leuck, M. S.: *Fields of Work for Women.* D. Appleton and Company, New York, 1926.

Levitas, A.: *Printing and Typography for Beginners.* McGraw-Hill Book Company, New York, 1924.

Lindbergh, Charles A.: *We.* G. P. Putnam's Sons, New York, 1927.

Marden, Orison S.: *Choosing a Career.* Vocational Service Corporation, Chicago, 1917.

Mears, James R.: *The Iron Boys in the Steel Mills.* The Boys of Steel Series. Henry Altemus Company, Philadelphia, 1912.

Meyer, Wastrel: *Practical Radio.* McGraw-Hill Company, New York, 1923.

*Milwaukee Vocational School Series: *My Life-Work.* Rodgers, Robert H., and Bellman, Harry S., editors. Milwaukee Vocational School Press, Milwaukee, Wisconsin, 1925. (A series of thirty-four monographs on the building trades, the metal trades, the printing trades, other industrial vocations, and business and clerical vocations.)

Moffett, C.: *Careers of Danger and Daring.* Century Company, New York.

Moran, Selby A.: *Over One Hundred Ways to Work Your Way Through College.*

Mott, John R.: *The Future Leadership of the Church.* Y.M.C.A. Press, New York, 1908.

Myers, George E.: *The Problem of Vocational Guidance.* The Macmillan Company, New York, 1927.

Neumann, Henry: *Education for Moral Growth.* D. Appleton and Company, New York, 1923.

O'Reilly, J.: *How to Become a Fireman.* Civil Service Employees Publishing Company, New York, 1924.

Pageant of America, The. R. H. Gabriel. Yale University Press, New York, 1925–27.

Palmer, George H.: *The Ideal Teacher.* Houghton Mifflin Company, Boston, 1917.

Patri, Angelo: *A Schoolmaster of the Great City.* The Macmillan Company, New York, 1917.

Pinchot, Gifford: *The Training of a Forester.* J. B. Lippincott Company, Philadelphia, 1917.

*Platt, Rutherford H., and Farnham, Rebecca T.: *The Book of Opportunities.* G. P. Putnam's Sons, New York, 1928.

Porte, R. T.: *Letters to a Printer's Devil.* Porte Publishing Company, Salt Lake City, 1924.

Proctor, W. M.: *Educational and Vocational Guidance.* Houghton Mifflin Company, 1925.

Ripley, William Z.: *Main Street and Wall Street.* Little, Brown and Company, Boston, 1927.

Rolt-Wheeler, Francis W.: *A Boy with the U.S. Foresters.* Lothrop, Lee and Shepard Company, Boston, 1910.

Rolt-Wheeler, Francis W.: *A Boy with the U.S. Radio.* Lothrop, Lee and Shepard Company, Boston, 1924.

*Rosengarten, Wm.: *Choosing Your Life-Work.* McGraw-Hill Book Company, New York, 1925.

Sanford, A. H.: *The Story of Agriculture in the United States.* D. C. Heath, Boston, 1916.

Sietz, Don C.: *Training for the Newspaper Trade.* J. B. Lippincott Company, Philadelphia, 1916.

Southard, Lydia.: *Institutional Household Administration.* J. B. Lippincott Company, 1923.

Spiker, John B.: *The Real Estate Business as a Profession.* D. Appleton and Company, Cincinnati, 1923.

Stevenson, John: *Selling Life Insurance.* Harper and Brothers, New York, 1922.

Strong, Edward K., Jr.: *The Psychology of Selling Life Insurance.* Harper and Brothers, New York, 1922.

Tappan, Eva M.: *Diggers in the Earth.* Houghton Mifflin Company, Boston, 1916.

Tappan, Eva M.: *The Farmer and His Friends.* Houghton Mifflin Company, Boston, 1916.

Tappan, Eva M.: *Heroes of Progress.* Houghton Mifflin Company, Boston, 1928.

Tappan, Eva M.: *Travelers and Traveling.* Houghton Mifflin Company, Boston, 1916.

Tower, Walter S.: *The Story of Oil.* D. Appleton and Company, New York, 1909.

Vallery-Radot, René: *The Life of Pasteur.* Doubleday, Doran and Company, Inc., New York, 1923.

**Vocational Information.* Stanford University Bulletin, Third Series, No. 76, edited by the Committee on Vocational Guidance, Stanford University, California, 1923.

Ward, Henshaw: *Exploring the World.* Bobbs, Merrill Company, Indianapolis, 1927.

Warman, Cy: *The Story of the Railroad.* D. Appleton and Company, New York, 1898.

Weaver, D. W. and E. W.: *Medicine as a Profession.* The A. S. Barnes Company, New York, 1917.

Weaver, E. W.: *Building a Career.* Association Press, New York, 1922.

Weaver, E. W.: *Profitable Vocations for Girls.* Laidlaw Brothers, New York.

Weaver, E. W. and Byler, J. F.: *Profitable Vocations for Boys.* Laidlaw Brothers, New York.

Wells, Linton: *Around the World in Twenty-Eight Days.* Houghton Mifflin Company, Boston, 1926.

Williams, Archibald: *Conquering the Air.* Thomas Nelson and Sons, New York, 1926.

Williams, Charles D.: *A Prophetic Ministry for To-day.* The Macmillan Company, New York, 1921.

Woodruff, R. E.: *The Making of a Railroad Officer.* Simmons, Boardman Publishing Company, New York, 1925.

Wright, Henry P.: *The Young Man and Teaching.* The Macmillan Company, New York, 1920.

*Ziegler, Samuel H., and Jaquette, Helen: *Choosing an Occupation.* The John C. Winston Company, Philadelphia, 1924.

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This Was
Taken
with Eldon

Amos and Andy

Howard Lewis
and
Jack Kizzie
Two Black Crows

M. H. S.